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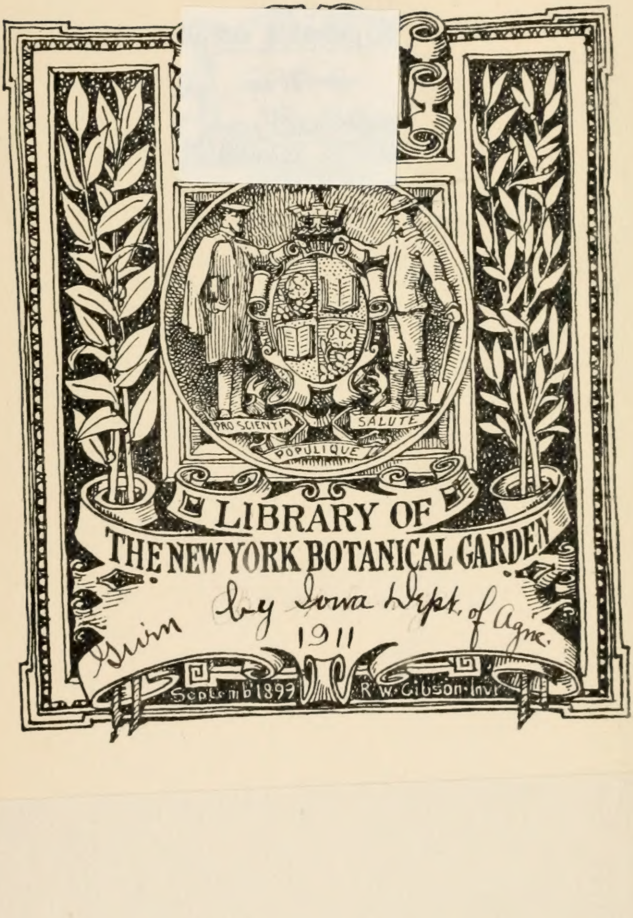
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J. C. Simpson

Secretary Iowa Department of Agriculture

December 12, 1901 to February 1, 1911

ELEVENTH ANNUAL

Iowa Year Book of Agriculture

Issued by the

Iowa Department of Agriculture

1910

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LETTER OF TRANSMITTAL

Office of Iowa State Department of Agriculture,
Des Moines, Iowa, June 15, 1911.

To His Excellency, B. F. Carroll, Governor of Iowa:

Sir:—I have the honor to transmit herewith the Eleventh Annual Iowa Year Book of Agriculture, for the year 1910.

ARTHUR R. COREY,
Acting Secretary State Board of Agriculture.

INTRODUCTORY

The Iowa Year Book of Agriculture for the year 1910 contains fifteen distinct parts. Preceding part one we have reproduced the information and tables contained in the bulletin issued by the U. S. Bureau of the Census, giving advance information on Iowa farms and farm property, live stock, principal crops, and farm expense as it will appear in the thirteenth census of the United States.

Part I is the final report of the Iowa Weather and Crop Service for 1910. It includes the monthly review of the climatology for the year; a monthly summary of weather and crop conditions; the dates of the last killing frosts in spring and the first in autumn; final climate and crop review for the year; comparative data for the state on temperature and precipitation, and a tabulated crop summary showing estimated production and valuation of Iowa's principal farm crops. Also a table showing the final estimate on acreage and production of the principal farm crops by counties for the state.

Part II contains statistical tables of Iowa's principal farm crops for the years 1880, 1885 and 1890 and for the years 1896 to 1910 inclusive; acreage, production and value of the principal farm crops of the United States in 1910 and statistics of the principal crops of the world for the years 1905 to 1910, inclusive, by countries.

Part III is a compilation of the crop and other farm statistics for the year 1910, gathered by the various township assessors and reported to this department by the county auditor of each county in the state. This data is contained in five tables as follows:

Table No. 1. Total number, average size and total acreage of farms; total acreage occupied by farm buildings, acreage in pasture, orchard, garden and crops not otherwise enumerated; number silos on farms and average monthly wage paid farm help during summer and winter months, by counties, for the year 1910. Table No. 2. Gives the acreage, yield per acre and total yield of corn, oats, barley, winter wheat and spring wheat, by counties, for the year 1910. Table No. 3. Gives the acreage, yield per acre and total yield of rye, tame hay, wild hay, alfalfa, potatoes and flax seed, by counties,

MAR 2 - 1912

for the year 1910. Table No. 4. Gives number of horses, mules and cattle, all ages; number cattle sold for slaughter and average number of cows milked and number of swine on farms July 1, 1910. Number of sheep kept on farm; number shipped in for feeding and number sold for slaughter and pounds of wool sold. The total number of all varieties of poultry on farm July 1, 1910, and total number of dozen eggs received, by counties, for the year 1910. Table No. 5. Gives acreage in sweet corn, pop corn, and acreage and total yield of timothy and clover seed by counties for the year 1910.

Part IV is a report of the proceedings of the joint session of the annual state Farmers' Institute and Corn Belt Meat Producers Association, held on December 10, 1910.

Part V is a report of the proceedings of the State Agricultural Convention held December 14, 1910.

Part VI is a synopsis of the proceedings of the State Board of Agriculture and Executive and Special Committee meetings from December 11, 1909, to December 12, 1910.

Part VII is a report of the proceedings of the annual meeting of the Swine Breeders' Association for 1910.

Part VIII sets forth the proceedings of the Thirty-fourth Annual Convention of the Iowa State Dairy Association, held at Waterloo, October 10th to 15th, inclusive, 1910.

Part IX is a reprint of the State Dairy Commissioner's report for the year 1910, the twenty-fourth annual report of that department.

Part X contains a reprint of the State Veterinary Surgeon's report for the year 1910.

Part XI contains papers on live stock, agricultural and miscellaneous topics from United States and Experiment Station bulletins, agricultural press, and papers read before county farmers' institutes. Also a financial statement of county farmers' institutes in Iowa receiving state aid.

Part XII contains the press reports of the Iowa State Fair and Exposition from the leading agricultural papers of this and neighboring states. Also the official report of awards in the live stock departments of the 1910 fair and the scoring and standing of boys in the judging contest.

Part XIII gives a report of agricultural conditions by counties from the secretaries of the various county and district agricultural societies.

Part XIV is a report of the horse breeding industry in Iowa, giving a list of certificates and transfers issued from May 1, 1910, to May 1, 1911; also a copy of the law governing state enrollment of stallions kept for public service, sale, exchange or transfer, as passed by the Thirty-fourth General Assembly, and which becomes effective January 1, 1912, and a copy of the lien law for service fee.

Part XV is a directory of associations and organizations representing agricultural interests in Iowa.

A. R. COREY,
Acting Secretary Iowa State Board of Agriculture.

DES MOINES, IOWA, June 15, 1911.

STATE BOARD OF AGRICULTURE

1911

EX-OFFICIO MEMBERS.

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President of Iowa State College	Ames
State Dairy Commissioner	Des Moines
State Veterinarian	Des Moines

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*John Ledgerwood, *Vice President*	Weldon
***O. A. Olson, *Vice President*	Forest City
†J. C. Simpson, *Secretary*	Des Moines
**A. R. Corey, *Acting Secretary*	Des Moines
G. S. Gilbertson, *Treasurer*	Des Moines

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First Dsitrict—R. S. Johnston	Columbus Junction
Second District—C. W. Phillips	Maquoketa
Third District—E. M. Reeves	Waverly
Fourth District—E. J. Curtin	Decorah
Fifth District—E. M. Wentworth	State Center
Sixth District—T. C. Legoe	What Cheer
Seventh District—C. F. Curtiss	Ames
Eighth District—Frank Sheldon	Mt. Ayr
Ninth District—John F. Summers	Malvern
****Tenth District*—O. A. Olson	Forest City
††*Tenth District*—John P. Mullen	Fonda
Eeleventh District—H. L. Pike	Whiting

*Resigned as Vice President April 4, 1911.

††Elected by State Board of Agriculture to fill vacancy April 4, 1911.

†Resigned as Secretary February 1, 1911.

**Elected Acting Secretary to fill vacancy February 1, 1911.

***Resigned as member of board April 4, 1911, and elected Vice President to fill vacancy.

The President, Vice President, Secretary and Treasurer are elected for one year.

Terms of the Directors for odd-numbered Districts expire second Wednesday in December, 1911. Terms of Directors from even-numbered Districts expire second Wednesday in December, 1912.

COMMITTEES

YEAR 1911

EXECUTIVE.

C. E. CAMERON..*A. R. COREY
O. A. OLSON

AUDITING.

C. W. PHILLIPS ....T. C. LEGOE
R. S. JOHNSTON

RESOLUTIONS.

E. M. WENTWORTH ....E. J. CURTIN
F. E. SHELDON

POWERS AND DUTIES OF BOARD.

C. E. CAMERON..*A. R. COREY
O. A. OLSON
E. M. REEVES C. F. CURTISS

ADULTERATION OF FOODS, SEEDS AND OTHER PRODUCTS.

E. W. STANTON...W. B. BARNEY
E. M. WENTWORTH.

NOXIOUS WEEDS, FUNGUS DISEASES IN GRAINS, GRASSES, PLANTS, ETC.

E. M. REEVES ....O. A. OLSON
J. F. SUMMERS.

DAIRYING AND DAIRY PRODUCTS.

W. B. BARNEY..J. F. SUMMERS
O. A. OLSON

ANIMAL INDUSTRY.

C. F. CURTISS ....J. I. GIBSON
H. L. PIKE.

LEGISLATIVE.

C. E. CAMERON ....*A. R. COREY
O. A. OLSON
C. W. PHILLIPS F. E. SHELDON

REVISION OF PREMIUM LIST, RULES AND REGULATIONS.

C. E. CAMERON ....*A. R. COREY
O. A. OLSON
R. S. JOHNSTON C. F. CURTISS
H. L. PIKE.

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*Elected Acting Secretary to succeed J. C. Simpson February 1, 1911.

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AGRICULTURAL BULLETIN

Thirteenth Census of the United States: 1910

FARMS AND FARM PROPERTY, LIVE STOCK, PRINCIPAL CROPS AND FARM EXPENSES

Prepared under the supervision of LeGrand Powers,
Chief Statistican for Agriculture

INTRODUCTION

This bulletin presents the larger part of the statistics of agriculture for Iowa collected at the census of 1910, including all which have been compiled up to the date of issue. These data, together with additional information, will be later embodied in a compendium for the state and in the final reports of the Thirteenth Census. In addition to the information contained in this and other bulletins, the compendium and final reports will give for the state as a whole data, analysis, and comparisons with preceding censuses which it would not be feasible to give for the individual counties. The census statistics relating to farms and farm property are of the date April 15, 1910; those relating to farm operations are for the calendar year 1909. All these statistics have been collected and are being compiled in accordance with the provisions of section 8 of the act of July 2, 1909, as follows:

The schedules relating to agriculture shall include name, color, and country of birth of occupant of each farm, tenure, acreage of farm, acreage of woodland and character of timber thereon, value of farm and improvements, value of farm implements, number and value of live stock on farms and ranges, number and value of domestic animals not on farms and ranges, and the acreage of crops planted and to be planted during the year of enumeration, and the acreage of crops and the quantity and value of crops and other farm products for the year ending December thirty-first next preceding the enumeration.

To assist in securing comparability for its statistics of agriculture, the Bureau of the Census provided the enumerators with certain definitions and with instructions concerning the more important terms contained in the foregoing provision of law, which were essentially as given below:

Farm.—A "farm" for census purposes is all the land which is directly farmed by one person managing and conducting agricultural operations, either by his own labor alone or with the assistance of members of his household or hired employees. The term "agricultural operations" is used as a general term referring to the work of growing crops, producing other agricultural products, and raising animals, fowls, and bees. A "farm" as thus defined may consist of a single tract of land, or of a number of separate and distinct tracts, and these several tracts may be held under different tenures, as where one tract is owned by the farmer and another tract is hired by him. Further, when a landowner has one or more tenants, renters, croppers, or managers, the land operated by each is considered a "farm."

In applying the foregoing definition of a "farm" for census purposes, enumerators were instructed to report as a "farm" any tract of 3 or more acres used for agricultural purposes, no matter what the value of the products raised upon the land, or the amount of labor involved in operating the same in 1909. In addition, they were instructed to report in the same manner all tracts containing less than 3 acres which either produced at least $250 worth of farm products in the year 1909, or on which the continuous services of at least one person were expended. The enumerators were further instructed to return farm schedules for all institutions which conducted agricultural operations, but to report as the farms of such institutions only the lands which were actually used by them for agricultural operations.

Farmer.—A "farmer" or a "farm operator," according to the census definition, is a person who directs the operation of a farm. Hence owners of farms who do not themselves direct the farm operations are not reported as "farmers." Farmers are divided by the Bureau of the Census into three general classes, according to the character of their tenure, namely, farm owners, farm tenants, and farm managers.

Farm owners include (1) farmers operating their own land only, and (2) those operating both their own land and some land hired from others.

Farm tenants are farmers who, as tenants, renters, or croppers, operate hired land only. They were reported in 1910 in three classes: (1) *Share tenants*—those who pay a certain share of the products, as one-half, one-third, or one-quarter; (2) *share-cash tenants*—those who pay a share of the products for part of the land rented by them and cash for part, as cash for pasture or garden and a share of all the crops grown on plowed land; and (3) *cash tenants*—those who pay a cash rental or a stated amount of labor or products, such as $7, 10 bushels of wheat, or 100 pounds of cotton per acre. All tenants who did not specify whether they rented for cash or for a share of the products, or both, are tabulated as having "tenure not specified.".

Managers are farmers who are conducting farm operations for the owner for wages or a salary.

Farm land.—Farm land is divided into (1) improved land, (2) woodland, and (3) all other unimproved land. The same classification was followed in 1880. At former censuses, except that of 1880, farm land was divided into improved land and unimproved land, woodland being included with unimproved land. *Improved land* includes all land regularly tilled or mowed, land pastured and cropped in rotation, land lying fallow, land in gardens, orchards, vineyards, and nurseries, and land occupied by farm buildings. *Woodland* includes all land covered with natural or planted forest trees, which produce, or later may produce, firewood or other forest products. *All other unimproved land* includes brush land, rough or stony land, swamp land, and any other land which is not improved or in forest. It should be noted however, in this connection that the census classification of farm land as "improved land," "woodland," and "other unimproved land" is one not always easy for the farmers or enumerators to make, owing to the fact that the farmers sometimes use these terms with different meanings from those assigned to them by the Bureau of the Census. Thus, some consider poor "woodland" as "other unimproved land," while others call brush land "woodland." As a result the census classification of farm land as "improved," etc., is not as accurate as its report of total farm acreage and value.

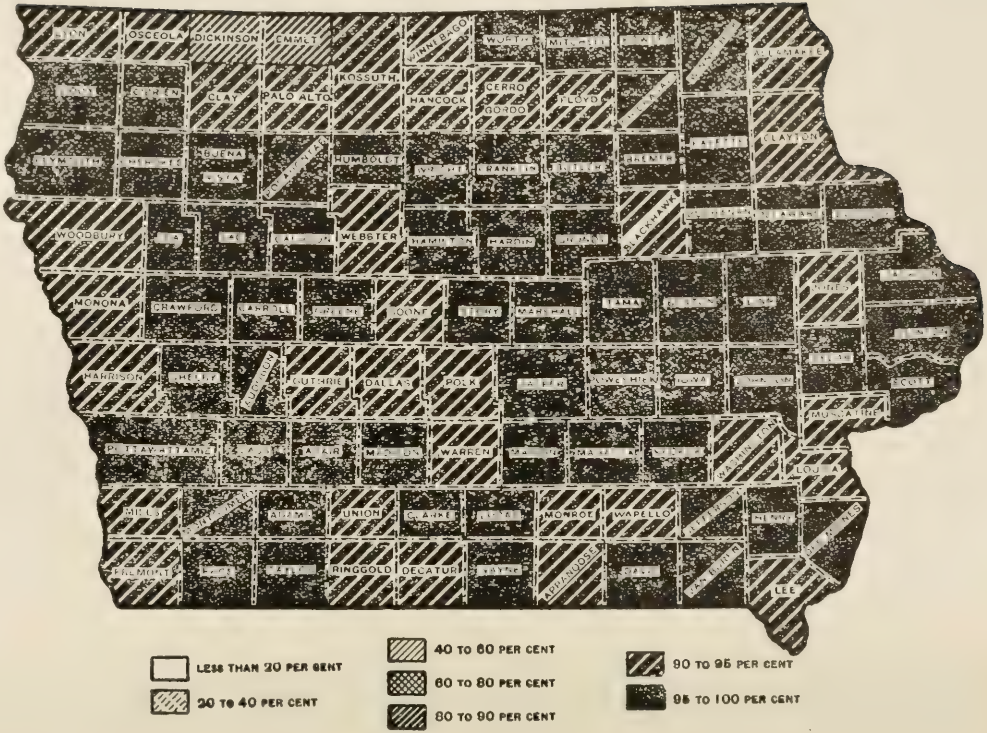
The two maps reproduced herewith show, for the different counties, the proportion of the total land area which is in farms and the average value of farm land per acre. Of the total land area of the state over nineteen-twentieths is in farms, and as shown by the first map only two counties have less than nine-tenths of their land surface in farms, while in a majority of the counties the proportion is nineteen-twentieths or higher.

The average value per acre of farm land for the whole state is $82.58. In twenty-two counties, comprising a group in the east central part of the state, a belt running north and south near the western border, and four counties in the southeastern part of the state, the value ranges between $100 and $125 per acre. The value is between $75 and $100 per acre in a majority of the remaining counties, including practically all of those in the central and western parts of the state with the exception of those just mentioned in which the value is between $100 and $125, and a number of counties in the southeastern part of the state. In most of the counties in the two northern tiers, about half of the counties in the two southern tiers, and most of the counties in the northeastern corner of the state the value is between $50 and $75 per acre. In only three counties does the average value of farm land fall below $50 per acre.

Progress during the decade 1900 *to* 1910.—Between 1900 and 1910 there was a decrease in population of 7,082, or 0.3 per cent, and a decrease in the number of farms of 11,578, or 5.1 per cent, together with a decrease of 643,649 acres, or 1.9 per cent, in farm land. As a result of the greater relative decrease in the number of farms than in the total acreage of farm land, the average size of the farms increased over 5 acres.

Farm property, which includes land, buildings, implements and machinery, and live stock (domestic animals, poultry, and bees), has increased in value during the decade nearly $2,000,000,000, or more than 100 per

PER CENT OF LAND AREA IN FARMS
(Per cent for the state, 95.4)


OSCEOLA
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EMMET
WINNEBAGO
ALLAMAKEE
CLAY
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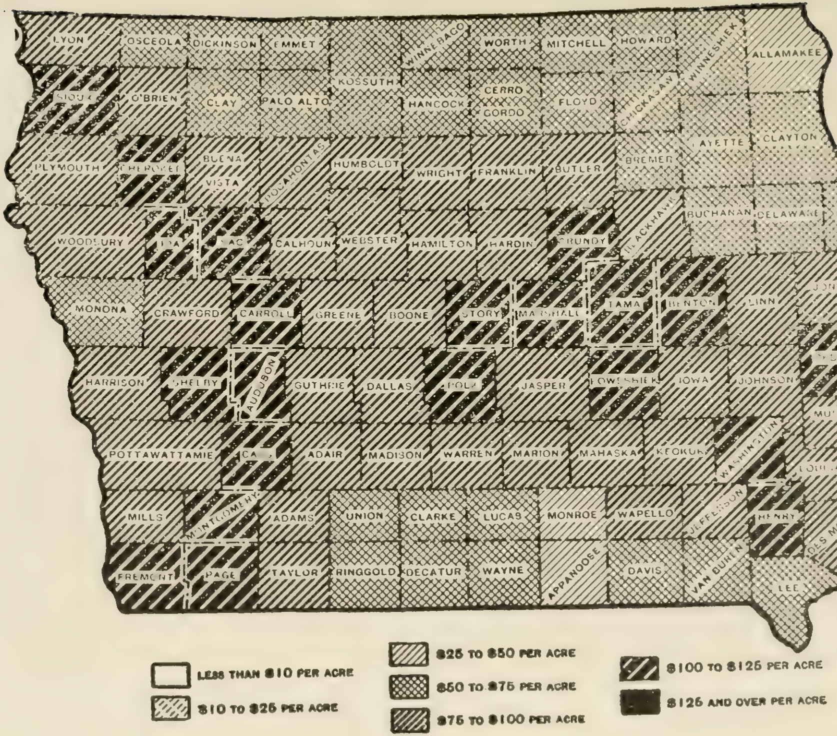
FLOYD
CLAYTON
BUENA
VISTA
HUMBOLDT
WOODBURY
WEBSTER
HARDIN
BLACKHAWK
MONONA
CRAWFORD
GREENE
BOONE
MARSHALL
TAMA
JONES
HARRISON
GUTHRIE
DALLAS
POLK
IOWA
SCOTT
MUSCATINE
WARREN
MILLS
ADAMS
UNION
CLARKE
MONROE
WAPELLO
FREMONT
RINGGOLD
DECATUR
APPANOOSE
LEE
LESS THAN 20 PER CENT
20 TO 40 PER CENT
40 TO 60 PER CENT
60 TO 80 PER CENT
80 TO 90 PER CENT
90 TO 95 PER CENT
95 TO 100 PER CENT

AVERAGE VALUE OF FARM LAND PER ACRE

(Average for the state, $82.58)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CLAY
PALO ALTO
KOSSUTH
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
BLACKHAWK
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
CLINTON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE
LESS THAN $10 PER ACRE
$10 TO $25 PER ACRE
$25 TO $50 PER ACRE
$50 TO $75 PER ACRE
$75 TO $100 PER ACRE
$100 TO $125 PER ACRE
$125 AND OVER PER ACRE

cent. This great increase is made up chiefly of increases of over $1,500,000,000 in the value of land and of nearly $215,000,000 in the value of buildings. There was also an increase of over $150,000,000 in the value of farm equipment, including implements and machinery and live stock, more than three-fourths of which represents the gain in the value of live stock. In considering the increase of values in agriculture the general increase in the prices of all commodities in the last ten years should be borne in mind.

FARMS AND FARM PROPERTY.

Iowa ranks twenty-third in land area and fifteenth in population among the states and territories of continental United States. It has passed out of the class of states that are adding to their total farm area. In fact, it has a little less land in farms than it had in 1900.

The entire state of Iowa lies within the northern portion of the low plateau which constitutes the upper part of the Mississippi River drainage basin. The altitude of the southeastern two-fifths of the state ranges from 800 to 1,000 feet, while the altitude of the western and northern parts varies from 1,000 feet to about 1,500 feet in the northwestern portion. With the exception of a small section in the extreme northeastern part of the state, where the Mississippi river is bordered by rugged bluffs, the surface of the state is undulating to rolling and in a few sections hilly. All of the state, with the exception of the section in the northeastern part just referred to, has been subject to repeated glacial invasions. As a result the underlying rocky floor is usually covered to a depth ranging from 15 or 20 feet to extreme depths of over 200 feet, by mechanically ground and thoroughly mixed glacial debris commonly known as the till.

The chief drainage of the state is eastward to the Mississippi River. The portions of the state adjacent to both the Mississippi and Missouri Rivers are thoroughly drained. The north central portion is much more in need of artificial drainage, and there are also considerable areas within the southern portion of the state in which the natural drainage, particularly of the subsoil, is inadequate.

Five different soil areas are distinguished, consisting of the glaciated plateau covering the north central two-fifths of the state; the deep loess soils bordering the Missouri and Mississippi rivers and also extending from the east in a narrow belt nearly to the center of the state, together covering nearly one-third of the state; the shallow loess soil of the south central section, covering about one-fifth of the state; the small unglaciated section in the northeast corner and narrow lines of alluvial soil along the Mississippi and Missouri Rivers.

The soils are mainly dark brown to almost black clay loams, silt loams, and loams, with a small amount of sandy loams in scattered areas. With few exceptions these soils are deep, fertile, and well supplied with organic matter. Both with respect to topography and soils Iowa is peculiarly favored for agricultural exploitation. All of the staple crops of northern climates may be grown within the state.

The following table summarizes for the state the more significant facts relating to population and land area, the number, value, and acreage of farms, and the value of all other farm property in 1910 and 1900:

Number, Area and Value of Farms	1910 (April 15)	1900 (June 1)	Increase*	
			Amount	Per ct.
Population	2,224,771	2,231,853	—7,082	—0.3
Number of all farms	217,044	228,622	—11,578	—5.1
Approximate land area of the state acres	35,575,040	35,575,040		
Land in farms, acres	33,930,688	34,574,337	—643,649	—1.9
Improved land in farms, acres	29,491,199	29,897,552	—406,353	—1.4
Average acres per farm	156.3	151.2	5.1	3.4
Value of farm property:				
Total	$3,745,860,544	$1,834,345,546	$1,911,514,998	104.2
Land	2,801,973,729	1,256,751,980	1,545,221,749	123.0
Buildings	455,405,671	240,802,810	214,602,861	89.1
Implements and machinery	95,477,948	57,960,660	37,517,288	64.7
Domestic animals, poultry and bees	393,003,196	278,830,096	114,173,100	40.9
Average value of all property per farm	$17,259	$8,023	$9,236	115.1
Average value of land per acre	$82.58	$36.35	$46.23	127.2

*A minus sign (—) denotes decrease.

The average value of a farm with its equipment in 1900 was slightly more than $8,000, while 10 years later it was over $17,000. The average value of the land alone rose from $36.35 per acre in 1900 to $82.58 in 1910, this advance being accompanied by increases in the average value per farm of buildings, of implements and machinery, and of live stock.

Population, number of farms, and farm acreage, 1850 *to* 1910.—The table following presents, for the state as a whole for each census from 1850 to 1910, inclusive, a statement of the total population, the number of farms, and the acreage of farm land and of improved land in farms. It also gives the percentage of the land area in farms, the percentage of farm land improved, and the percentage of increase during each decade in the number of farms and in the land in farms.

In the 60 years since 1850 the population of the state has increased by 2,032,557, or more than tenfold, although, as already pointed out, there has been a slight decrease during the last decade.

There are 217,044 farms in Iowa, or almost fifteen times as many as in 1850. The increase was very rapid from 1850 to 1880, averaging 5,685 per year. During the next 20 years the average yearly increase was 2,164, but during the decade just past the number of farms has been decreasing at the rate of 1,158 per year. This decrease was general throughout the state, only 12 counties in different parts of the state showing even slight increases.

Census Year	Population	Farms		Land in Farms			Per cent of land area in farms	Per cent of farm land improved
				All Land				
		Number	Per cent of increase*	Acres	Per cent of increase*	Improved land (acres)		
1910	2,224,771	217,044	—5.1	33,930,688	—1.9	29,491,199	95.4	86.9
1900	2,231,853	228,622	13.2	34,574,337	13.4	29,897,552	97.2	86.5
1890	1,912,297	201,903	8.9	30,491,541	23.2	25,428,899	85.7	83.4
1880	1,624,615	185,351	59.4	24,752,700	59.3	19,866,541	69.6	80.3
1870	1,194,020	116,292	90.1	15,541,793	54.3	9,396,467	43.7	60.5
1860	674,913	61,163	313.1	10,069,907	268.0	3,792,792	28.3	37.7
1850	192,214	14,805	-------	2,736,064	-------	824,682	7.7	30.1

*A minus sign (—) denotes decrease.

The land area of Iowa is approximately 35,575,040 acres. Of this area 33,930,688 acres, or 95.4 per cent, are included in farms. Of the farm acreage 29,491,199 acres, or 86.9 per cent, are reported as improved land, representing 82.9 per cent of the total land area of the state. The total acreage of farm land decreased 1.9 per cent during the last decade, while that of improved land decreased only 1.4 per cent. As the reported acreage of improved land showed a smaller relative decrease from 1900 to 1910 than did the total acreage in farms, the percentage of farm land improved was slightly higher in 1910 than in 1900.

The table given above also shows a very rapid increase from 1850 to 1880 in the total farm acreage and in the acreage of improved land. The proportion of the total land area of the state which was occupied by farms rose during this period from 7.7 to 69.6 per cent, while the proportion which improved land formed of the total land in farms increased from 30.1 to 80.3 per cent. From 1880 to 1900 the increase in the total acreage of farm land and in the acreage of improved land was much slower, while during the last decade both have decreased. The proportion of the total area of the state in farms reached its maximum in 1900, when it was 97.2 per cent. The increase in the proportion of farm land improved has continued up to the present census, although there was only a slight gain during the last decade.

Values of farm property, 1850 *to* 1910.—The agricultural changes in Iowa since 1850, as reflected in the values of the several classes of farm property, are shown in the next table.

The total wealth of the state in the form of farm property is about $3,746,000,000, of which 87 per cent is represented by land and buildings, 2.5 per cent by implements and machinery, and 10.5 per cent by live stock. The relative gain (104.2 per cent) in the total value of farm property from 1900 to 1910 was greater than that during any other decade since 1870, while the absolute gain ($1,911,515,000) was over two and a half times as great as the largest increase reported for any other decade. Of the total increase during the last decade $1,759,825,000 represents the increase in the value of land and buildings, $37,517,000 the increase in the value of implements and machinery, and $114,173,000 the increase in the value of live stock.

Census Year	Farm Property							
	Total		Land and buildings		Implements and machinery		Domestic animals, poultry and bees	
	Value	Per cent of increase	Value	Per cent of increase	Value	Per cent of increase	Value	Per cent of increase
1910	$3,745.860,544	104.2	$3,257.379,400	117.5	$95,477,948	64.7	$393,003,196	40.9
1900	1,834,345,546	66.7	1,497,554,790	74.6	57,960,660	58.1	278,830,096	35.1
1890	1,100,682,579	52.6	857,581,022	51.1	36,665,315	24.8	206,436,242	65.5
1880	721,517,214	81.8	567,430,227	80.6	29,371,884	79.0	124,715,103	87.9
1870*	396,927,325	168.7	314,129,953	162.0	16,407,666	208.0	66,389,706	195.4
1860	147,702,873	586.4	119,899,547	619.8	5,327,033	354.2	22,476,293	509.2
1850	21,519,711	-------	16,657,567	-------	1,172,869	-------	3,689,275	------

* Computed gold values, being 80 per cent of the currency values reported.

Average acreage and values per farm, 1850 *to* 1910.—The changes which have taken place during the past 60 years in the average acreage of Iowa farms and in the average values of the various classes of farm property as well as in the average value per acre of land and buildings, are shown in the following table:

Census Year	Average acres per farm	Average Value per Farm*				Average value of land and buildings per acre
		All farm property	Land and buildings	Implements and machinery	Domestic animals, poultry and bees	
1910	156.3	$17,259	$15,008	$440	$1,811	$96.00
1900	151.2	8,023	6,550	253	1,220	43.31
1890	151.0	5,452	4,247	182	1,022	28.13
1880	133.5	3,893	3,061	158	673	22.92
1870†	133.6	3,413	2,701	141	571	20.21
1860	164.6	2,415	1,960	87	367	11.91
1850	184.8	1,454	1,125	79	249	6.09

*Averages are based on "all farms" in state.
† Computed gold values, being 80 per cent of the currency values reported.

The average size of the Iowa farm decreased a little more than 2.5 acres per year from 1850 to 1870. During the decade from 1870 to 1880 it remained practically stationary and since 1880 it has increased about 23 acres, or over three-fourths of an acre per year. The average farm is now larger than at any census since 1860.

The average value of an Iowa farm, including its equipment, has more than doubled during the last decade, increasing from $8,023 in 1900 to

$17,259 in 1910. Of the value in 1910, $15,008 represents land and buildings, $1,811 live stock, and $440 implements and machinery. Farm values in Iowa have, in fact, increased steadily and rapidly since the first census of agriculture was taken in 1850. At that time the average value of the farm with equipment was only $1,454, or hardly one-twelfth of what it is to-day. In no other decade, however, has the increase been as great as it was between 1900 and 1910. The value per farm of farm equipment, which includes implements and machinery and live stock, is now nearly seven times as great as 60 years ago.

Farm tenure: 1880 *to* 1910.—The following table shows the distribution of the farms of the state according to character of tenure at each census since 1880:

Tenure.	1910	1900	1890	1880
Number of all farms	217,044	228,622	201,903	185,351
Farms operated by owners and managers	134,929	148,886	145,183	141,177
Farms consisting of owned land only	106,464	118,317	*	*
Farms consisting of owned and hired land	26,539	28,988	*	*
Farms operated by managers	1,926	1,581	*	*
Farms operated by tenants	82,115	79,736	56,720	44,174
Share tenants	20,935	35,234	31,780	35,753
Share-cash tenants†	14,129			
Cash tenants	43,394	44,502	24,940	8,421
Tenure not specified‡	3,657			
Per cent of farms operated by—				
Owners and managers	62.2	65.1	71.9	76.2
Tenants	37.8	34.9	28.1	23.8
Share and share-cash	16.2	15.4	15.7	19.3
Cash and nonspecified	21.7	19.5	12.4	4.5

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*Not reported separately.

†Share-cash tenants were doubtless largely included with share tenants in 1900, 1890 and 1880.

‡Prior to 1910 nonspecified tenants were included with cash tenants.

It is significant that while the total number of farms decreased 11,578 during the last decade, the number operated by owners and managers decreased 13,957, the number operated by tenants having increased 2,379.

In 1880 approximately one farm out of every four was operated by a tenant, since which time the proportion has increased until it is now slightly more than three out of eight.

The number of share (including share-cash) tenants is about the same as in 1880, although during the interval the number has fluctuated somewhat and has decreased slightly since 1900. On the other hand, the number of cash (including nonspecified) tenants has increased rapidly and in 1900 and 1910 exceeded the number of share tenants. In 1880 share tenants were over four times as numerous as cash tenants, but in 1910 the latter (including those with unspecified tenure) were one and one-third times more numerous than the former.

Farm mortgages: 1890 *to* 1910.—The Eleventh Census (1890) was the first to collect data relating to mortgage debt on farms. The basis of the returns was the "farm home" occupied by its owner. The same class of information was secured by the population schedules of the Twelfth Census (1900). The agricultural schedules of the Thirteenth Census (1910) secured practically the same information, except that the basis was "owned farms" instead of "owned farm homes"—a difference involving, however, no appreciable incomparability.

The next table relates to farms operated by persons owning all or part of the land, and shows for 1910 (1) the number of such farms reported as free from mortgage; (2) the number reported as mortgaged; and (3) the number for which no mortgage reports were secured. Comparable items are included for 1900 and 1890.

Class	Owned Farms*		Owned Farm Homes		Owned Farm Homes†	
	1910		1900		1890	
	Number	Per cent‡	Number	Per cent‡	Number	Per cent
Total	133,003	--------	146,754	--------	144,698	--------
Free from mortgage	63,234	48.2	67,616	47.0	67,587	46.7
Mortgaged	68,045	51.8	76,389	53.0	77,111	53.3
Unknown	1,724	--------	2,749	--------	--------	--------

*Includes all farms owned in whole or in part by the operator.

†The 1,370 "owned farm homes" for which no reports were secured were distributed between "free from mortgage" and "mortgaged" in 1890.

‡ Per cent of combined total of "free from mortgage" and "mortgaged."

In 1910 the total number of farms owned in whole or in part by their operators was 133,003. Of this number, 63,234 were reported as free from mortgage; 68,045 were reported as mortgaged; and for 1,724 no report relative to mortgage indebtedness was obtained. The number of mortgaged farms constituted 51.8 per cent of the total number of owned farms, exclusive of those for which no mortgage report was obtained. The percentage is only slightly smaller than it was in 1900 and 1890. It may be noted that the percentages given for the three censuses are comparable, but that the number of mortgaged and unmortgaged farms reported in 1890 is not entirely comparable with the numbers reported at the latter censuses because at the census of 1890 the farms for which no reports were secured were distributed between the classes of mortgaged and unmortgaged farms. It can be seen, however, that from 1890 to 1910 the number mortgaged decreased much more than the number free of mortgage.

The statement of mortgage debt and of the value of mortgaged farm property is restricted to the farms of those farmers who own all of the their land and report the amount as well as the fact of indebtedness. Of the 68,045 farms reported as mortgaged, 52,174 are wholly owned by the farmers, and for 50,452 of these the amount of mortgage debt is reported. Only these last mentioned farms are included for 1910 in the next table, which presents data relating to mortgaged farms for 1910 and 1890. In this connection it should be noted that in 1890 the amount of mortgage debt of farms with incomplete reports was estimated according to the percentages and averages obtained from farms with full reports, but that no such estimate is here made for 1910. The table gives a comparative statement of the value of mortgaged farms owned entirely by their operators and the amount of indebtedness, together with the average value of such farms, the average debt per farm, and the average equity per farm for 1910 and 1890. Data regarding the amount of mortgage debt were not obtained in 1900.

The average debt of mortgaged farms increased in the 20 years from $1,319 to $4,048, or 207 per cent, while the average value of such farms rose from $3,964 to $14,574, or 267.7 per cent. Thus the owner's equity increased from $2,645 to $10,526, or 298 per cent. As a result of the greater increase in farm values than in farm debt, the mortgage indebtedness, which was 33.3 per cent of the value of the mortgaged farms in 1890, had decreased to 27.8 per cent of the value in 1910.

	Owned Farms or Farm Homes Mortgaged		Increase	
	1910*	1890†	Amount	Per cent
Number	50,452	77,111	----------	--------
Value—land and buildings	$735,265,320	$305,658,669	----------	--------
Amount of mortgage debt	$204,242,722	$101,745,924	----------	--------
Per cent of debt to value	27.8	33.3	----------	--------
Average value per farm	$14,574	$3,964	$10,610	267.7
Average debt per farm	$4,048	$1,319	$2,729	207.0
Average equity per farm	$10,526	$2,645	$7,881	298.0

*Includes only farms consisting wholly of owned land and reporting value of farm and amount of debt.

†Includes all owned farm homes, estimates being made of value of farms and amount of debt for all defective reports.

Farms by size groups, 1910 *and* 1900.—The following table shows the distribution of farms by size groups at the censuses of 1910 and 1900:

Size Group	Number of Farms		Increase*		Per Cent Distribution	
	1910	1900	Number	Per cent	1910	1900
Total	217,044	228,622	—11,578	—5.1	100.0	100.0
Under 3 acres	392	975	—583	59.8	0.2	0.4
3 to 9 acres	7,295	4,756	2,539	53.4	3.4	2.1
10 to 19 acres	6,037	5,917	120	2.0	2.8	2.6
20 to 49 acres	15,678	21,475	—5,797	—27.0	7.2	9.4
50 to 99 acres	38,712	49,665	—10,953	—22.1	17.8	21.7
100 to 174 acres	80,121	79,923	198	0.2	36.9	35.0
175 to 259 acres	40,304	38,144	2,160	5.7	18.6	16.7
260 to 499 acres	25,861	24,609	1,252	5.1	11.9	10.8
500 to 999 acres	2,430	2,818	—388	—13.8	1.1	1.2
1,000 acres and over	214	340	—126	—37.1	0.1	0.1

*A minus sign (—) denotes decrease.

As shown by the above table, the largest of the groups of farms classified by size is the "100 to 174 acres" group, the 80,121 farms in this group constituting 36.9 per cent, or more than one-third, of the 217,044 farms in the state. The common 160-acre farm falls in this group. The group which is next in numerical importance is the "175 to 259 acres" group, comprising 40,304 farms. Hardly less important is the "50 to 99 acres" group, which includes 38,712 farms. A study of the distribution of farms by size groups discloses the fact that the greatest actual and relative gain in number from 1900 to 1910 was made in the "3 to 9 acres" group. The number of places "under 3 acres" where some agriculture is carried on is reported as only about two-fifths as great as 10 years ago. This decrease may be due to a different interpretation by the enumerators as to what to include as a small farm, or may represent an actual decrease in that type of farm. The farms which fall in the groups between 20 and 99 acres have decreased 16,750 in number, or 23.5 per cent; those between 175 and 499 acres have increased 3,412 in number, or 5.4 per cent; and those which exceed 500 acres in size, representing only 1.2 per cent of all farms, have decreased 514 in number.

Color and nativity of farmers, 1910.—Prior to the present census no attempt was made to secure information on the farm schedules concerning the nativity of farmers. The table in the next column shows the color and nativity of farm operators by character of tenure for 1910.

Over three-fourths of the Iowa farmers are native whites, and nearly one-fourth foreign-born whites. Only 201, or one-tenth of 1 per cent of all farmers, are negroes, no other nonwhites being reported. Of the native white farmers, four out of ten are tenants and about six out of ten owners, while among both the negro and the foreign-born white farmers about three out of ten are tenants and seven out of ten owners.

Color and Nativity	Farm Operators							
	Total					Per Cent of Total		
	Number	Per cent distribution	Owners	Tenants	Managers	Owners	Tenants	Managers
Total	217,044	100.0	133,003	82,115	1,926	61.3	37.8	0.9
Native white	167,856	77.3	98,615	67,547	1,694	58.8	40.2	1.0
Foreign-born white	48,987	22.6	34,252	14,505	230	69.9	29.6	0.5
Negro and other nonwhite	201	0.1	136	63	2	67.7	31.3	1.0

DOMESTIC ANIMALS, POULTRY AND BEES.

[Includes only domestic animals, poultry, and bees kept on farms and ranges.]

Comparison, 1910 *and* 1900.—The values of the various kinds of domestic animals and of poultry and bees, as reported at the censuses of 1910 and 1900, and the changes in such values, are shown in the following table:

Kind	1910 (April 15)		1900 (June 1)		Increase*	
	Value	Per cent distribution	Value	Per cent distribution	Amount	Per cent
Total	$393,003,196	100.0	$278,830,096	100.0	$114,173,100	40.9
Cattle	118,864,139	30.2	142,518,902	51.1	—23,654,763	—16.6
Horses and colts	177,999,124	45.3	77,720,577	27.9	100,278,547	129.0
Mules and mule colts	7,551,818	1.9	3,586,761	1.3	3,965,057	110.5
Asses and buros	280,212	0.1	150,768	0.1	129,444	85.9
Swine	69,693,218	17.7	43,764,176	15.7	25,929,042	59.2
Sheep and lambs	5,748,836	1.5	3,956,142	1.4	1,792,694	45.3
Goats and kids	64,239	†	146,708	0.1	—82,469	—56.2
Other animals‡	14,400	†	6,675	†	7,725	115.7
Poultry	12,269,881	3.1	6,535,464	2.3	5,734,417	87.7
Bees	517,329	0.1	443,923	0.2	73,406	16.5

*A minus sign (—) denotes decrease.

†Less than one-tenth of one per cent.

‡Includes for 1910: Deer, $200; buffaloes, $12,200; elk, $2,000. For 1900: Deer, $2,950; buffaloes, $600; elk, $2,625; Belgian hares, $500.

During the decade domestic animals, poultry, and bees combined increased in value $114,173,000, or 40.9 per cent, in spite of the large decrease in the value of cattle. The greatest change is noted in the value of horses and colts, the increase in which is over seven-eighths as great as the net gain for live stock as a whole. The decrease in the value of cattle amounted to $23,655,000, or 16.6 per cent. This decrease in value is explained in large measure by the fact that during the decade the number of cattle decreased from 5,367,630 to 4,448,006, or 919,624. This decrease occurred in all classes of cattle except "other cows," which increased in number from 461,031 in 1900 to 614,930 in 1910, or 153,899. The census of 1900 was taken as of June 1, after all the spring calves were born, while that of 1910 was taken as of April 15, before the close of the calving season and when the calves on hand were on the average younger than at the enumeration of 1900. As a result, the calves enumerated were fewer in number and of lower average value in 1910 than in 1900, the number decreasing from 1,290,279 to 569,003 and the average value from $11.17 to $6.74.

The value of swine increased $25,929,000, or 59.2 per cent; that of poultry, $5,734,000, or 87.7 per cent; and that of mules and mule colts, $3,965,000, or 110.5 per cent.

The value of horses and colts ($177,999,000) is about one and one-half times that of cattle, and the two together represent 75.5 per cent of the value of all live stock; swine represent 17.7 per cent and poultry 3.1 per cent. The value of poultry is more than twice as great as the value of sheep and lambs.

Domestic animals, 1910.—The next table summarizes the statistics of domestic animals for the state, recorded as of April 15, 1910. Cattle and sheep are divided into age and sex groups, while horses, mules, and swine are presented by age groups only.

Of the total number of farms enumerated, 213,131 or 98.2 per cent, report domestic animals of some kind, the number without any domestic animals being only 3,913.

Of all the farms in the state, 94.7 per cent report cattle, 93.3 per cent, "dairy cows," and only 41 per cent, "other cows." Only 3,015 farms have cattle without having dairy cows. The farms reporting dairy cows show an average of 7 per farm, which is also the average number of other cows per farm reporting that class.

Horses and colts are reported by 96.7 per cent of all the farms in the state, while 42.6 per cent report colts born in 1909, and 15.1 per cent, spring colts. Spring colts are valued at a little over one-half as much as yearling colts and more than one-fourth as much as mature horses; the average value of the latter is $128.40.

About one farmer out of every ten reports mules and mule colts. The average values of mules of the different ages are about 20 per cent higher than those of horses of the corresponding age groups, except in the case of mature animals, where the difference is a little over 15 per cent.

Sheep and lambs are reported from 21,810 farms, or one out of every ten. Of these farms, 77.3 per cent report spring lambs, the number of the latter being equal to 55.5 per cent of the number of ewes. This comparatively small proportion is doubtless due to the early date of enumeration. Ewes are reported from all but 895 of the farms reporting sheep, and for the farms reporting the average is over 32 ewes per farm. The farms reporting rams and wethers show an average of about 8 per farm.

Of all farms, 84.8 per cent report swine, the average being over 41 per farm reporting. The average value of the swine reported as "hogs and pigs born before January 1, 1910," is $14.88, while that of spring pigs is less than one-eighth of this amount.

Age and Sex Group	Farms Reporting		Animals		
	Number	Per cent of all farms	Number	Value	Average value
Total	213,131	98.2	------------	$380,201,586	----------
Cattle	205,554	94.7	4,448,006	118,864,139	----------
Dairy cows (cows and heifers kept for milk, born before Jan. 1, 1909)	202,539	93.3	1,406,792	48,651,418	$34.58
Other cows (cows and heifers not kept for milk, born before Jan. 1, 1909)	89,065	41.0	614,930	17,715,974	28.81
Heifers born in 1909	134,190	61.8	564,219	8,714,358	15.44
Calves born after Jan. 1, 1910	144,422	66.5	569,003	3,836,951	6.74
Steers and bulls born in 1909	107,795	49.7	557,164	10,781,320	19.35
Steers and bulls born before Jan. 1, 1909	74,796	34.5	735,898	29,164,118	39.63
Horses and colts	209,812	96.7	1,492,226	177,999,124	----------
Mares, stallions and geldings born before Jan. 1, 1909	205,916	94.9	1,289,973	165,638,084	128.40
Colts born in 1909	92,396	42.6	159,679	10,873,651	68.10
Colts born after Jan. 1, 1910	32,665	15.1	42,574	1,487,389	34.94
Mules and mule colts	21,872	10.1	55,524	7,551,818	----------
Mules born before Jan. 1, 1909	18,476	8.5	46,485	6,877,871	147.96
Mule colts born in 1909	4,701	2.2	7,557	612,601	81.06
Mule colts born after Jan. 1, 1910	1,265	0.6	1,482	61,346	41.39
Asses and burros (all ages)	832	0.4	1,614	280,212	173.61
Swine	184,002	84.8	7,545,853	69,693,218	----------
Hogs and pigs born before Jan. 1, 1910	181,820	83.8	4,299,499	63,976,554	14.88
Pigs born after Jan. 1, 1910	106,747	49.2	3,246,354	5,716,664	1.76
Sheep and lambs	21,810	10.0	1,145,549	5,748,836	----------
Ewes born before Jan. 1, 1910	20,915	9.6	676,687	4,381,545	6.47
Rams and wethers born before Jan. 1, 1910	11,062	5.1	93,230	587,375	6.30
Lambs born after Jan. 1, 1910	46,866	7.8	375,632	779,916	2.08
Goats and kids (all ages)	2,400	1.1	20,664	64,239	3.11

Poultry, 1910 *and* 1900.—The following table gives the numbers of the various kinds of poultry reported in 1910 and 1900, together with their value, and the number of farms reporting each kind in 1910:

Kind	1910 (April 15)				1900 (June 1)
	Farms Reporting				
	Number	Per cent of all farms	Number of fowls	Value	Number of fowls
Total	204,635	94.3	23,482,880	$12,269,881	20,043,343
Chickens	204,569	94.2	22,961,641	11,632,064	18,907,673
Turkeys	26,866	12.4	124,164	251,449	424,306
Ducks	40,771	18.8	225,284	120,101	487,752
Geese	44,494	20.5	215,196	217,673	223,612
Guinea fowls	8,587	4.0	38,448	13,942	*
Pigeons	7,901	3.6	187,994	34,155	†
All other‡	37	§	153	497	†

*Included with chickens.

†Not reported.

‡Thirty-one farms report 99 peafowls, valued at $286; 5 farms report 29 pheasants, valued at $136; and 1 farm reports 25 wild geese, valued at $75.

§Less than one-tenth of one per cent.

The value of the fowls on Iowa farms increased in the 10 years, 1900 to 1910, from $6,535,000 to $12,270,000, or 87.7 per cent, while the corresponding increase in the number of fowls was only 17.2 per cent. The number of farms reporting poultry decreased from 214,832 to 204,635, while the average number of fowls per farm reporting increased from 93 to 115. The value of poultry and the number of farms reporting were obtained in 1900 for the total of all fowls only, and not for each kind, as in 1910.

Bees, 1910 *and* 1900.—The number of farms reporting bees has decreased from 28,977 in 1900 to 28,935 in 1910, or 0.1 per cent. The number of colonies of bees increased from 138,811 to 160,025, or 15.3 per cent, and their value increased from $443,923 to $517,329, or 16.5 per cent. The average value of bees per farm reporting was $15.32 in 1900 and $17.88 in 1910. More than one farm out of every eight reports bees.

GRAINS AND SEEDS, HAY AND FORAGE, AND SUNDRY CROPS.

The following table presents the statistics for the leading crops and for certain minor crops for the crop year 1909.

Crop	Farms reporting	Acaes harvested	Quantity		Value
			Amount	Unit	
Cereals, total		15,041,039	489,803,121	Bu.	$230,205,315
Corn	196,561	9,229,378	341,750,463	Bu.	167,622,834
Oats	151,769	4,655,154	128,198,055	Bu.	49,046,888
Wheat, total		526,777	8,055,944	Bu.	7,703,205
Common winter	15,379	236,708	4,310,922	Bu.	4,134,036
Common spring	22,327	288,810	3,726,593	Bu.	3,553,695
Durum or macaroni	191	1,259	18,429	Bu.	15,474
Emmer and spelt	767	7,256	139,839	Bu.	65,436
Barley	36,435	571,224	10,964,184	Bu.	5,320,708
Buckwheat	1,731	9,066	120,559	Bu.	86,941
Rye	4,301	42,042	570,996	Bu.	357,220
Kafir corn and milo maize	66	142	3,081	Bu.	2,083
Other grains and seeds:					
Flaxseed	1,361	15,549	140,906	Bu.	182,569
Alfalfa seed	2		7	Bu.	50
Clover seed	2,424		36,201	Bu.	275,842
Millet seed	217		47,959	Bu.	32,759
Timothy seed	16,467	242,838	1,028,664	Bu.	1,405,866
Other tame grass seed	79		5,213	Bu.	6,772
Ginseng seed	1				500
Sunflower seed	1		25	Bu.	25
Dry edible beans	973	615	5,699	Bu.	12,428
Dry peas	183	731	9,007	Bu.	11,669
Peanuts	21	13	359	Bu.	296
Hay and forage, total	180,698	5,046,185	7,823,181	Tons	59,360,225
Timothy alone	65,376	1,312,422	1,952,956	Tons	16,307,556
Timothy and clover mixed	103,805	2,445,836	3,732,186	Tons	30,380,941
Clover alone	8,851	125,751	195,579	Tons	1,523,966
Alfalfa	4,301	29,143	84,569	Tons	718,271
Millet or Hungarian grass	5,687	31,547	54,346	Tons	339,320
Other tame or cultivated grasses	3,315	61,257	84,361	Tons	517,181
Wild, salt, or prairie grasses	49,131	845,954	1,178,000	Tons	6,913,714
Grains cut green	2,130	17,131	30,594	Tons	192,943
Coarse forage	17,352	177,113	510,184	Tons	2,464,265
Root forage	12	31	406	Tons	2,068
Sundry crops:					
Potatoes	170,318	169,567	14,710,247	Bu.	6,629,234
Sweet potatoes and yams	3,667	2,274	232,413	Bu.	125,763
Tobacco	174	81	102,886	Lbs.	8,751
Hops	13		2,625	Lbs.	251
Broom corn	49	156	75,370	Lbs.	6,670
Ginseng	11	5	289	Lbs.	1,862

The leading crops of the state in the order of importance, as judged by total value, are: Corn, $167,623,000; hay and forage, $59,360,000; oats, $49,047,000; wheat, $7,703,000; potatoes, $6,629,000; barley, $5,321,000; and timothy seed, $1,406,000.

By far the most important crop is corn, the reported value of this cereal being nearly three times as great as that of hay and forage, which ranks second, and nearly three and a half times as great as that of oats, which ranks third. From oats to wheat, the cereal ranking next below in value, there is a big drop, the reported value of wheat being less than one-sixth that of oats. In both value and yield winter wheat outranks spring wheat, though the latter exceeds the former both in acreage and in number of farms reporting. Potatoes show a value nearly as great as that of wheat. Timothy seed in some sections of the state is an important crop. Of the total acreage of this crop, almost one-third is reported from six counties—three in the northeastern and three in the southeastern and southern parts of the state. Of the 15,011,039 acres devoted to cereals in 1909, over three-fifths were in corn, which, together with the acreage in oats, accounts for over nine-tenths of the whole. "Timothy and clover mixed" and "timothy alone" constitute nearly three-fourths of all hay and forage crops. Alfalfa is reported for every county, except two, yet three-fourths of the acreage is in the western tier of counties.

For several of the less important crops the acreages are omitted because of uncertainties in the reports; it is believed, however, that the reports of yields are reliable. During the past decade none of the minor crops, with the exception of alfalfa, have made much headway. This crop is now grown by about one farmer in fifty and is valued at nearly $25 per acre.

The fluctuations in the acreages of some of the principal crops during the past 30 years are shown in the following table:

Crop Year	Acres Harvested					
	Corn	Oats	Wheat	Barley	Hay and forage	Potatoes
1909	9,229,378	4,655,154	526,777	571,224	5,046,185	169,567
1899	9,804,076	4,695,391	1,689,705	627,851	4,649,378	175,888
1889	7,585,522	3,752,141	585,548	518,729	5,238,918	169,870
1879	6,616,144	1,507,577	3,049,288	198,861	2,490,027	*

*Not reported.

The acreage in corn increased from approximately six and two-thirds millions in 1879 to a little more than nine and three-quarters millions in 1899, subsequently decreasing to somewhat less than nine and a quarter millions in 1909. The acreage in oats and also that in barley more than trebled between 1879 and 1899, but decreased slightly during the past decade. The acreage of wheat has varied widely at different periods. At the present census it is less than one-third as large as it was in 1899, and slightly less than it was in 1889. In 1879, however, the acreage of wheat was almost six times that reported in 1909. For all cereals combined there was a falling off in acreage, during the last decade, of 1,879,056, or 11.1 per cent, all of the important cereal crops sharing in the decrease. By far the greatest of the decreases is that shown for wheat, the acreage of which decreased over two-thirds during the decade. For the other cereal crops, with the exception of rye, the decrease in acreage was relatively small, being in the case of barley 9 per cent, with corn and oats following in order. The only crop here enumerated for which a gain in acreage is reported for the last decade is hay and forage, the gain amounting to 396,807 acres.

The next table shows for 1909 and 1899 the percentage which the farms reporting specified crops represented of all farms, the percentage of improved land devoted to these crops, and the percentage of increase or decrease in the acreage of each crop during the decade, together with the average yields and average values per acre for 1909:

Crop	Per Cent of Farms Reporting		Per Cent of Improved Land		Per cent of increase in acres, 1899 to 1909*	Average Yield per Acre	Av. Value per Acre
	1909	1899	1909	1899		1909	1909
Corn	90.6	92.9	31.3	32.8	—5.9	37.1 Bu.	$ 18.16
Oats	69.9	72.7	15.8	15.7	—0.9	27.5 Bu.	10.54
Wheat		37.1	1.8	5.7	—68.8	15.3 Bu.	14.62
Barley	16.8	14.9	1.9	2.1	—9.0	19.2 Bu.	9.31
Rye	2.0	4.7	0.1	0.3	—52.9	13.6 Bu.	8.50
Flaxseed	0.6	3.6	0.1	0.4	—87.7	9.1 Bu.	11.74
Timothy seed	7.6	†	0.8	†		4.2 Bu.	5.79
Hay and forage	83.3	81.8	17.1	15.6	8.5	1.6 Tons	11.76
Potatoes	78.5	77.2	0.6	0.6	—3.6	86.8 Bu.	39.10

*A minus sign (—) denotes decrease.
†Not reported.

Corn is grown by over nine-tenths of the farmers of the state, hay and forage by more than eight-tenths, and oats by about seven-tenths. Potatoes are reported from about four farms in five. None of the other crops are very generally grown. Slightly more than one-half of all improved land is in cereals and about one-sixth in hay and forage.

The average value per acre for all cereals combined is $15.31, which among the cereals is exceeded by the average for corn only. Corn is reported at about one and one-third times the value of wheat per acre, wheat ranking second. Hay and forage ranks in value per acre above each of the cereals other than the two just mentioned, falling, however, almost 40 per cent short of the value of corn per acre.

Within the state some important readjustments have taken place. The acreage of wheat, though decreasing greatly in the state as a whole, shows relatively large increases in all the southeastern counties, and in some of the extreme southern counties, but nowhere else is there an exception to the general tendency. Oats, on the contrary, show important gains in acreage in all of the northwestern counties, small gains in a few of the central and southern counties, and decreases elsewhere. Barley, although showing a net decrease in acreage, made gains in nearly two-thirds of the counties, the losses, largely in a few northwestern counties, overbalancing them. The decrease in the corn acreage is distributed quite evenly over the state, gains occurring in but seven scattered counties, and in a line of counties extending from Mitchell county west to the corner of the state and south to Plymouth, inclusive. The greatest increase is in Lyon county, about 35,000 acres; the greatest decrease, in Taylor, over 25,000 acres.

Hay and forage increased quite generally, decreases occurring in a small group of counties in the north central part of the state, and in a group extending along the southern border.

FARM EXPENSES

The table following shows the number of farms reporting expenditures for labor, feed, and fertilizer at the census of 1910, as well as the sums expended in 1909 and 1899, with amount and per cent of increase:

Expense	1909			1899	Increase*	
	Farms Reporting					
	Number	Per cent of all farms	Amount	Amount	Amount	Per cent
Labor	108,890	50.2	$24,781,592	$16,375,670	$ 8,405,922	51.3
Feed	81,302	37.5	18,582,251	†		
Fertilizer	1,776	0.8	109,570	337,190	—227,620	—67.5

*A minus sign (—) denotes decrease.
†Not reported at the census of 1900.

During the decade the total expenditure for labor, one-fourth of which was in 1909 in the form of rent and board furnished, increased 51.3 per cent. Half of the farmers of Iowa hire labor, the average amount expended by those hiring in 1909 being $228. At prior censuses no tabulation was made of the number of farmers reporting expenditures for labor.

Three farmers out of every eight report some expenditure for feed, while less than one out of every hundred reports the purchase of fertilizer. Less than one-third as much was spent for fertilizer in 1909 as in 1899, the average expenditure per farm for those reporting in 1909 being $61.69.

TABLE NO. 1—FARMS AND FARM PROPERTY FOR THE STATE.

Population	2,224,771
Population in 1900	2,231,853
Number of all farms	217,044
Number of all farms in 1900	228,622
Color and nativity of farmers:	
Native white	167,856
Foreign-born white	48,987
Negro and other nonwhite	201
Number of farms, classified by size:	
Under 3 acres	392
3 to 9 acres	7,295
10 to 19 acres	6,037
20 to 49 acres	15,678
50 to 99 acres	38,712
100 to 174 acres	80,121
175 to 259 acres	40,304
260 to 499 acres	25,861
500 to 999 acres	2,430
1,000 acres and over	214

TABLE No. 1—Continued

LAND AND FARM AREA		
Approximate land area	acres	35,575,040
Land in farms	acres	33,930,688
Land in farms in 1900	acres	34,574,337
Improved land in farms	acres	29,491,199
Improved land in farms in 1900	acres	29,897,552
Woodland in farms	acres	2,314,115
Other unimproved land in farms	acres	2,125,374
Per cent of land area in farms		95.4
Per cent of farm land improved		86.9
Average acres per farm		156.3
Average improved acres per farm		135.9
VALUE OF FARM PROPERTY		
All farm property	dollars	3,745,860,544
All farm property in 1900	dollars	1,834,345,546
Per cent increase, 1900-1910		104.2
Land	dollars	2,801,973,729
Land in 1900	dollars	1,256,751,980
Buildings	dollars	455,405,671
Buildings in 1900	dollars	240,802,810
Implements and machinery	dollars	95,477,948
Implements, etc., in 1900	dollars	57,960,660
Domestic animals, poultry, and bees	dollars	393,003,196
Domestic animals, etc., in 1900	dollars	278,830,006
Per cent of value of all property in—		
Land		74.8
Buildings		12.2
Implements and machinery		2.5
Domestic animals, poultry, and bees		10.5
Average values:		
All property per farm	dollars	17,259
Land and buildings per farm	dollars	15,008
Land per acre	dollars	82.58
Land per acre in 1900	dollars	36.35
DOMESTIC ANIMALS (Farms and Ranges)		
Farms reporting domestic animals		213,131
Value of domestic animals	dollars	380,201,586
Cattle:		
Total number		4,448,006
Dairy cows		1,406,792
Other cows		614,930
Yearling heifers		564,219
Calves		569,003
Yearling steers and bulls		557,164
Other steers and bulls		735,898
Value	dollars	118,864,139
Horses:		
Total number		1,492,226
Mature horses		1,289,973
Yearling colts		159,679
Spring colts		42,574
Value	dollars	177,999,124
Mules:		
Total number		55,524
Mature mules		46,485
Yearling colts		7,557
Spring colts		1,482
Value	dollars	7,551,818
Asses and burros:		
Number		1,614
Value	dollars	280,212
Swine:		
Total number		7,545,853
Mature hogs		4,299,499
Spring pigs		3,246,354
Value	dollars	69,693,218
Sheep:		
Total number		1,145,549
Rams, ewes, and wethers		769,917
Spring lambs		375,632
Value	dollars	5,748,830

TABLE No. 1—CONTINUED

Goats:	
Number	20,664
Value ..... dollars	64,239
POULTRY AND BEES	
Number of poultry of all kinds	23,482,880
Value ..... dollars	12,269,881
Number of colonies of bees	160,025
Value ..... dollars	517,329

TABLE NO. 2—NUMBER, ACREAGE AND VALUE OF FARMS, AND COLOR AND NATIVITY OF FARMERS CLASSIFIED BY TENURE APRIL 15, 1910.

FARMS OPERATED BY OWNERS	
Number of farms	133,003
Number of farms in 1900	147,305
Per cent of all farms	61.3
Per cent of all farms in 1900	64.4
Land in farms ..... acres	20,214,337
Improved land in farms ..... acres	17,432,235
Value of land and buildings ..... dollars	1,942,594,349
Degree of ownership:	
Farms consisting of owned land only	106,464
Farms consisting of owned and hired land	26,539
Color and nativity of owners:	
Native white	98,615
Foreign-born white	34,252
Negro and other nonwhite	136
FARMS OPERATED BY TENANTS.	
Number of farms	82,119
Number of farms in 1900	79,736
Per cent of all farms	37.8
Per cent of all farms in 1900	34.9
Land in farms ..... acres	13,225,546
Improved land in farms ..... acres	11,674,987
Value of land and buildings ..... dollars	1,269,791,126
Form of tenantry:	
Share tenants	20,935
Share-cash tenants	14,129
Cash tenants	43,394
Tenure not specified	3,657
Color and nativity of tenants:	
Native white	67,547
Foreign-born white	14,505
Negro and other nonwhite	63
FARMS OPERATED BY MANAGERS	
Number of farms	1,926
Number of farms in 1900	1,581
Land in farms ..... acres	490,805
Improved land in farms ..... acres	383,977
Value of land and buildings ..... dollars	44,993,925
MORTGAGE DEBT REPORTS*	
For all farms operated by owners:	
Number free from mortgage debt	63,234
Number with mortgage debt	68,045
Number with no mortgage report	1,724

TABLE No. 2—CONTINUED

For farms consisting of owned land only:	
Number reporting debt and amount	50,452
Value of their land and buildings ... dollars	735,265,320
Amount of mortgage debt ... dollars	204,242,722
Per cent of value of land and buildings	27.8

*No mortgage reports were secured for farms operated by tenants and managers.

TABLE No. 3—FARM EXPENSE, 1909

Labor:	
Farms reporting	108,890
Cash expended ... dollars	18,586,300
Rent and board furnished ... dollars	6,195,292
Feed:	
Farms reporting	81,302
Amount expended ... dollars	18,582,251
Fertilizer:	
Farms reporting	1,776
Amount expended ... dollars	109,570

PART I.

Report of the Iowa Weather and Crop Service for 1910.

George M. Chappel, Director.

This report is a compilation of climatic data and statistics of soil products, for the year 1910, in convenient form for reference and comparison.

Meteorological reports were received regularly each month of the year from 120 co-operative and 7 regular stations of the U. S. Weather Bureau, and weekly weather and crop reports were received during the six crop months from 175 correspondents.

During the year this office distributed 42,000 copies of the weekly bulletin (issued during the six crop months); also 27,000 copies of the Monthly Review of the Weather and Crop Service, and 5,000 pamphlets giving the precipitation data for the several drainage basins of the State, which were printed by the Chief U. S. Weather Bureau.

The distribution of the daily weather forecasts was continued during the year as follows: by telephone, 171,389; rural mail services, 4,189; ordinary mail, 1,993; by telegraph at expense of U. S. Weather Bureau, 142, making a total of 177,711 forecasts distributed daily. Special warnings of the approach of cold waves and heavy snows were also distributed whenever issued.

CLIMATOLOGY OF THE YEAR, 1910.

The year, 1910, was in some respects extremely abnormal. It was the driest year on record since observations began in 1890, and the early spring and fall months were warm and pleasant; the average temperature for the latter half of March being higher than the mean for the latter half of April. The precipitation was below the normal every month of the year except January and September, and the excess in these months was small. There were not as many severe wind storms as usual and the average amount of snowfall was less than 50 per cent. of the amount for 1909.

Barometer, (Reduced to sea level.)—The mean pressure of the atmosphere for the year 1910, was 30.04 inches. The highest observed pressure was 30.83 inches, at Keokuk, Lee County on December 13th. The lowest pressure observed was 29.14 inches, at Charles City, Floyd county on January 26th. The range for the state was 1.69 inches.

TEMPERATURE.—The mean temperature for the state was 48.7°, which is 1.2° above the normal for the state. The highest annual mean was 52.3° at Keokuk, Lee County; and at Ottumwa, Wapello County. The lowest annual mean was 44.5° at Sibley, Osceola County. The highest temperature reported was 108° at Ridgeway, Winneshiek County, on July 16th. The lowest temperature reported was —35° at Elkader, Clayton County, on January 7th. The range for the state was 143°.

PRECIPITATION.—The average amount of rain and melted snow for the year as shown by the complete records of 111 stations was 20.03 inches, which is 12.62 inches below the normal, and 19.98 inches below the average amount in 1909. The greatest amount recorded at any station during the year was 27.99 inches at Burlington, Des Moines county. The least amount recorded was 12.11 inches, at Clear Lake, Cerro Gordo county. The greatest monthly rainfall was 11.22 inches at Atlantic, Cass County, in August. The least monthly precipitation was 0.00 at Audubon, Audubon County, Little Sioux, Harrison County, Odebolt, Sac County, Rock Rapids, Lyon County, and at Zearing, Story County, in March. The greatest amount in any twenty-four consecutive hours was 7.98 inches, at Pacific Junction, Mills County, on the 28th and 29th of August. The average amount of snowfall was 22.8 inches. The greatest amount of snowfall, unmelted, at any station during the year was 52.5 inches at Elkader, Clayton County. The least amount was 4.4 inches at Keokuk, Lee County. The greatest monthly snowfall was 26.5 inches at Elkader, Clayton County and at Humboldt, Humboldt County, in January; and the greatest twenty-four hour snowfall was 14.7 inches, at Humboldt, Humboldt, County on January 20th. Measurable precipitation occurred on an average of 67 days.

WIND.—The prevailing direction of the wind was northwest. The highest velocity reported was at Sioux City, Woodbury County, 65 miles an hour from the north, on April 23rd, and on August 2d.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 188; partly cloudy, 92; and, cloudy, 85; as against 152 clear days; 92 partly cloudy; and 121 cloudy days in 1909. The duration of sunshine was as a whole, slightly above the normal.

MONTHLY SUMMARIES

JANUARY.

The first ten days of January were unseasonably cold, but the remainder of the month, with the exception of two or three days, was mild, so that the average temperature for the month was only slightly below the normal. The 6th and 7th were the coldest days, the lowest temperature occurring generally on the 6th, when the minimum ranged from —8° to —33°, over the southern counties, and, from —18° to —35°, over the northern counties. The lowest temperatures were recorded in the western portion of the southern, and in the eastern portion, of the northern districts. There have been six colder Januarys during the past 21 years, but the minimum for the state, for the past month, was lower than in any January since 1892. The 19th and 25th were generally the warmest days, but there were only two or three days in the month on which the minimum temperature was above the freezing point, even in the extreme southern portions of the state.

The precipitation was above the normal, except in the southeast, and west central districts where there was a slight deficiency. Most of it fell in the form of snow during two storms; the first of which occurred on the 4th-5th, and the second on the 12th-13th. The fall of snow during these two storms was unusually heavy, and caused much delay in railroad traffic, which, together with the severe cold weather, during the early part of the month, came very near causing a fuel famine in this state. Only the energetic efforts of the railroad companies in clearing the snow from the tracks, and abandoning all freight trains, excepting those carrying coal,in order that fuel could be distributed as rapidly, and in as large quantities as possible, prevented serious suffering of the people in many localities. As it was, all coal had been exhausted in many towns, several days before a supply could be delivered to them. The accumulation of snow also did considerable damage to buildings, especially in the northern part of the state. The roofs of numerous structures collapsed as a result of the weight of the snow, causing damage estimated at about $10,000, in the City of Dubuque. Snow flurries occurred at frequent intervals during the latter half of the month, but the amounts of snow were small, and only tended to prolong the good sleighing, which began on December 5th or 6th. The ground was thoroughly covered with snow during the entire month, in the northern, and most of the month, in the southern districts and as a result. fall grains suffered no injury from the effects of the cold weather.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 117 stations. was 18.1°. which is 1.2° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 14.5°, which is 1.7° below the normal; Central section, 18.1° which is 1.1° below the normal; Southern section, 21.6°, which is 0.8° below the normal. The highest monthly mean was 27.0°, at Keokuk, Lee county, and the lowest monthly mean 11.8°, at Charles City, Floyd county. The highest temperature reported was 56°, at Perry, Dallas county, on the 10th; and at Stuart, Guthrie county, on the 26th; the lowest temperature reported was —35°, at Elkader, Clayton county, on the 7th. The average monthly maximum was 43°, and the average monthly minimum was —22°. The greatest daily range was 56°, at Iowa Falls, Hardin county. The average of the greatest daily ranges was 37°.

PRECIPITATION.—The average precipitation for the state as shown by the records of 121 stations, was 1.57 inches, which is 0.52 inch above the normal. By sections the averages were as follows: Northern section, 1.48 inches, which is 0.66 inch above the normal; Central section, 1.60 inches, which is 0.50 inch above the normal; Southern section, 1.64 inches, which is 0.40 inch above the normal. The greatest amount, 3.15 inches, occurred at Sheldon, O'Brien County, and the least, 0.55 inch, at Washta, Cherokee county. The greatest amount in twenty-four hours, 1.52 inches, occurred at Lacona, Warren county, on the 11th and 12th. Measurable precipitation occurred on an average of six days.

The average snowfall, unmelted, was 12.6 inches. By sections the average was as follows: Northern section, 16.3 inches; Central section, 13.0 inches; Southern section, 12.6 inches. The greatest monthly snowfall, 26.5 inches, occurred at Elkader, Clayton county, and at Humboldt, Humboldt county; and the greatest amount in 24 hours, 14.7 inches, occurred at Humboldt, Humboldt county, on the 20th.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 13; partly cloudy, 7; cloudy, 11. The duration of sunshine was below the normal, the percentage of the possible amount being 45 at Charles City; 44 at Davenport; 51 at Des Moines; 42 at Keokuk, and 43 at Sioux City.

WIND.—Northwest winds prevailed. The highest velocity reported was 55 miles per hour from the northwest, at Sioux City, Woodbury County, on the 20th.

FEBRUARY.

The weather during February was exceptionally pleasant, notwithstanding the fact that the average temperature was below the normal. The month opened with moderate temperature which continued until the 5th, and was then followed by alternating periods of cold and warm weather, with the coldest spell between the 22nd and 24th. The warmest day was generally on the 1st in the northern district, and on the 14th in the central and southern districts. There have been eight colder Februarys during the past twenty years. In 1905, the average temperature was 5° lower than the average for the past month. The coldest February during the past 20 years was in 1899 when the average temperature was 12.2°.

There was a marked deficiency of precipitation; the average for the state being only 0.46 inch, which is 0.60 below the normal. At several stations it was the driest February in over 30 years.

There were no severe storms and the 20th and 22d were the only days on which the precipitation was general. The ground was practically bare of snow over the southern counties, except from the 20th to 24th; but over the northern counties there was snow on the ground during the whole month.

The rivers remained closed with ice averaging from 10 to 22 inches at the close of the month.

Some progress was made in gathering last year's corn, but there is over 15 per cent of the crop yet in the fields.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 116 stations, was 17.8°, which is 1.4° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 13.2°, which is 3.0° below the normal; Central section, 18.0° which is 1.6° below the normal; Southern section, 22.1°, which is 0.3° above the normal. The highest monthly mean was 26.1° at Keokuk, Lee county, and the lowest monthly mean 10.0°, at Sibley, Osceola County. The highest temperature reported was 58°, at Keokuk, Lee County, on the 15th; the lowest temperature reported was —21°, at Inwood, Lyon county, on th 17th. The average monthly maximum was 46°, and the average monthly minimum was —12°. The greatest daily range was 48°, at Clarinda, Page County. The average of the greatest daily ranges was 35°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 127 stations, was 0.46 inch, which is 0.60 inch below the normal. By sections the averages were as follows: Northern section, 0.35 inch, which is 0.59 inch below the normal; Central section, 0.44, which is 0.64 inch below the normal; Southern section, 0.59 inch, which is 0.56 inch below the normal. The greatest amount, 2.09 inches, occurred at Burlington, Des Moines county, and the least, a trace, at Sibley Osceola county. The greatest amount in twenty-four hours, 0.80 inch, occurred at Audubon, Audubon county, on the 22nd, and at Fort Madison, Lee county, on the 26th. Measurable precipitation occurred on an average of 3 days.

The average snowfall, unmelted, was 4.0 inches. By sections the averages were as follows: Northern section, 3.6 inches; Central section, 4.0 inches; Southern section, 4.4 inches. Th greatest monthly snowfall, 11.3 inches, occurred at Fayette, Fayette county; and the greatest amount in twenty-four hours, 8.0 inches, occurred at Audubon, Audubon county, on the 22d.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 14; partly cloudy, 8; cloudy, 6. The duration of sunshine was slightly above the normal, the percentage of the possible amount being 66 at Charles City; 62 at Davenport; 47 at Des Moines; 61 at Dubuque; 53 at Keokuk, and 59 at Sioux City.

Wind.—Northwest winds prevailed. The highest velocity reported was 60 miles per hour from the northwest, at Sioux City, Woodbury county, on the 15th.

THE WINTER OF 1909-1910.

The mean temperature for the three winter months was 17.0°, which is 4.5° below the normal for the state. The highest temperature reported was 60° at Keosauqua, Van Buren county, on December 1st. The lowest temperature was 35° below zero at Elkader, Clayton county, on January 7th. The average monthly precipitation for the state was 1.40 inches and the average total precipitation was 4.21 inches, or .88 inches above the winter normal. The average total snowfall, unmelted, was 30.3 inches, or 11.0 inches more than for the winter of 1908-1909. The average number of days on which .01 inch or more of precipitation was reported was 20 or 6 more than the average for the winter of 1908-1909.

The average number of clear days was 37; partly cloudy, 20; cloudy, 33; as compared with 35 clear, 20 partly cloudy and 35 cloudy during the winter of 1908-1909.

AVERAGE WINTER TEMPERATURE FOR IOWA.

In Degrees Fahrenheit.

	December	January	February	Winter Min.
1890-1	29.1	26.0	19.4	24.8
1891-2	32.3	15.3	28.1	25.2
1892-3	18.9	9.3	16.4	14.9
1893-4	22.0	19.3	19.7	20.3
1894-5	30.1	13.6	16.4	20.0
1895-6	25.4	23.4	27.4	25.4
1896-7	30.8	17.2	24.7	24.2
1897-8	18.0	23.4	24.2	21.9
1898-9	18.1	19.8	12.2	16.7
1899-0	22.6	25.6	14.8	21.0
1900-1	26.9	23.7	17.5	22.7
1901-2	20.5	22.4	17.6	20.2
1902-3	20.1	23.0	19.8	21.0
1903-4	19.6	14.0	14.8	16.1
1904-5	23.4	11.2	12.8	15.8
1905-6	27.0	24.6	23.6	25.1
1906-7	25.7	18.8	25.0	23.2
1907-8	28.8	24.9	24.3	26.0
1908-9	27.2	21.2	26.2	24.9
1909-0	15.1	18.1	17.8	17.0
Means	24.1	19.7	20.1	21.8

MARCH.

March, 1910, will be long remembered as having furnished more pleasant weather than any other March in the history of the state. It was the warmest and driest March on record. It gave the largest amount of sunshine; the least number of cloudy days; the least number of days with appreciable precipitation; the least number of days with freezing temperature; and less snowfall than any other March since State-wide observations began. The temperature was uniformly high and above the normal every day of the month, with the warmest period between the 22d and 29th. The maximum occurred generally on the 23d and ranged from 81° to 87° over the Northern, 81° to 90° over the Central, and from 82° to 92° over the Southern districts. The monthly minimum temperatures occurred on various dates between the 1st and 15th.

There was no snowfall in excess of a trace at any station and the rainfall was abnormally light in all sections of the state. There were 8 stations that had no precipitation, and 34 that had only a trace. Rainfall was practically nil until the 26th, and the only days on which showers were at all general were the 26th and 29th. On the 1st of March there was from 6 to 8 inches of snow on the ground in the northern part of the State, but it had all melted by the 9th, and as there was practically no frost in the ground, the soil dried rapidly, and farmers were in the field early in the month gathering the remainder of last year's corn crop, plowing and seeding small grain. The larger part of the corn had been gathered by the 15th, and by the end of the month nearly all of the wheat and about 50 per cent of the oats had been seeded, and considerable ground had been prepared for corn. The season at the close of the month was nearly a month in advance of the normal and from five to six weeks ahead of last year. Spring flowers were in bloom; elms, soft maples, and box elders were green or becoming so, even in the extreme northern part of the State. Plum, cherry and apple trees were in bloom in the southern, and plums in the central districts. Pastures and meadows were green, and some of the early sown grain was up before the end of the month. Fall grain, clover and alfalfa were generally in good condition, but reports indicate much damage by winter killing in the western and southern counties.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 118 stations, was 48.9°, which is 14.9° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section 46.3°, which is 15.1° above the normal; Central section 49.2°, which is 13.1° above the normal; Southern section 51.2°, which is 14.5° above the normal. The highest monthly mean was 53.8°, at Ottumwa, Wapello County, and the lowest monthly mean 43.7°, at Elma, Howard County. The highest temperature reported was 92° at Clarinda, Page County, on the 22d; the lowest temperature reported was 10°, at Rock Rapids, Lyon County, on the 1st. The average monthly maximum was 85°, and the average monthly minimum was 20°. The greatest daily range was 61°, at Elkader, Clayton County. The average of the greatest daily ranges was 44°.

PRECIPITATION.—The average precipitation for the State, as shown by the records of 126 stations, was 0.17 inch, which is 1. 75 inches below the normal. By sections the averages were as follows: Northern section, 0.09 inch, which is 1.64 inches below the normal; Central section, 0.17 inch, which is 1.81 inches below the normal; Southern section, 0.26 inch, which is 1.79 inches below the normal. The greatest amount, 1.32 inches, occurred at Ames, Story County, and the least, 0.00 at eight stations, principally in the western part of the State. The greatest amount in any twenty-four hours, 1.32 inches, occurred at Ames, Story County, on the 26th. Measurable precipitation occurred on an average of one day.

Snow fell at eight scattered stations during the month but at no station was there an appreciable amount.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 23; partly cloudy, 6; cloudy, 2. The duration of sunshine was much above the normal, the percentage of the possible amount being 86 at Charles City; 82 at Davenport; 78 at Des Moines; 84 at Dubuque; 78 at Keokuk, and 65 at Sioux City.

WIND.—Southwest winds prevailed. The highest velocity reported was 52 miles per hour from the Northwest at Sioux City, Woodbury County, on the 6th.

THUNDERSTORMS.—Twenty-five co-operative stations reported thunderstorms on the 26th; ten on the 18th; nine on the 25th; five on the 19th: two on the 29th; and one on the 4th, 20th, 23d and 28th.

Thunderstorms were quite general on the 18th and on the night of the 25th and 26th. Thunder was also heard at scattered stations on the 4th, 20th, 23d, 28th and 29th.

An aurora of unusual brilliancy was observed over the northern counties on the 27th.

APRIL.

The first half of the month, like the whole of March, was dry and generally warm, but the latter half was very changeable and erratic; the temperature fluctuating from one extreme to another and the precipitation from rain to snow.

The average mean temperature was 4.0° above the normal for April; the excess occuring the first fifteen and the last three days. A cold spell set in on the evening of the 14th, attended by moderate showers which changed to snow on the 15th and continued over the larger part of the State until the 18th; the minimum temperatures on the 16th, 17th, and 18th being from 3° to 12° below the freezing point in all districts and the amounts of snowfall ranged from a trace in the southern to over five inches at some of the stations in the northeastern counties. The freezing temperatures seriously damaged the prospects of a fruit crop as apple, cherry and other fruit trees were in full bloom in the northern part of the State by the 10th of the month. The damage done, however, was small as compared with the damage resulting from the freeze of the 23d and 24th, when the minimum temperatures were 10° to 12° below the freezing point in the southern counties. The maximum temperature on the 23d was below the freezing point in the northeastern counties and the minimum on that date at many stations was lower than ever before recorded during the last decade of April. Great damage resulted to such fruit, garden truck, etc., as was not killed during the previous week. The ground froze hard on the morning of the 23d and the 24th and ice formed from one-half to one inch thick in tubs of standing water. Few trees or shrubs escaped injury and the foliage and new growth on some varieties, such as soft maples, box elders, wistaria, Virginia creeper, etc., were frozen and at the close of the month the dead leaves were falling off. Following this last cold period the temperature rose rapidly and the 28th and 29th were excessively warm; the maximum temperatures on those dates being 90° or higher over the western and central districts, the highest being 99° on the 28th in the extreme northwestern county. The maximum temperature on the 28th was higher than ever before recorded during April, over the western half of the State.

The average precipitation was 1.35 inches below the normal and was unevenly distributed; the eastern third of the State and the south central counties receiving the largest amounts while the extreme southwestern and a few localities in the north central counties received less than one-fourth of an inch. Much of the precipitation was in the form of snow or snow mixed with rain during the storms on the 15-18 and 22-24.

Owing to the warm, dry and pleasant weather during March, farming operations were further advanced than usual on April 1st. Practically all small grain was seeded before the middle of the month and nearly all of the corn ground was ready for the planter by the close of the month. Considerable corn was planted during the second week but that work was suspended generally after the 15th on account of cold weather.

The growth of grass and small grain was checked by the freezing temperature and in the western part of the State small grain, especially oats, was damaged by dry weather and high winds, but for the State at large small grain is reported to be in fairly good condition.

All rivers and creeks are below the normal stage for the season of the year.

Temperature.—The monthly mean temperature for the State, as shown by the records of 119 stations, was 52.5°, which is 4.0° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 51.7°, which is 4.9° above the normal; Central section, 52.7°, which is 4.2° above the normal; Southern section, 53.2°, which is 2.9° above the normal. The highest monthly mean was 56.0°, at Grinnell, Poweshiek county, and the lowest monthly mean 49.0°, at Sibley, Osceola county. The highest temperature reported was 99°, at Inwood, Lyon county, on the 28th; the lowest temperature reported was 15°, at Rock Rapids, Lyon county, on the 5th. The average monthly maximum was 92°, and the average monthly minimum was 22° The greatest daily range was 57°, at Pacific Junction, Mills county. The average of the greatest daily ranges was 44°.

Precipitation.—The average precipitation for the State, as shown by the records of 125 stations, was 1.48 inches, which is 1.35 inches below the normal. By sections the averages were as follows: Northern section, 1.18 inches, which is 1.29 inches below the normal; Central section, 1.48 inches, which is 1.39 inches below the normal; Southern section, 1.78 inches, which is 1.36 inches below the normal. The greatest amount, 4.86 inches, occurred at Burlington, Des Moines county, and the least, 0.10 inch, at Webster City, Hamilton county. The greatest amount in twenty-four hours, 1.83 inches, occurred at Keosauqua, Van Buren county, on the 6th. The average amount of unmelted snowfall was 3.0 inches, averaging as follows: Northern section, 4.3 inches; Central section, 2.3 inches; Southern section, 2.3 inches; the greatest amount was 11.3 inches at Ridgeway, Winneshiek county, while at eight stations only a trace occurred. Measurable precipitation occurred on an average of seven days.

Sunshine and Cloudiness.—The average number of clear days was 14; partly cloudy, 7; cloudy, 9. The duration of sunshine was slightly below the normal, the percentage of the possible amount being 71 at Charles City; 61 at Davenport; 50 at Des Moines; 46 at Keokuk, and 61 at Sioux City.

Wind.—Northwest winds prevailed. The highest velocity reported was 65 miles per hour from the north, at Sioux City, Woodbury county, on the 23d.

CONDITION OF FRUIT TREES.

The following report issued by the Secretary Iowa State Horticultural Society, shows the average condition of fruit trees and plants on April 1, 1910:

"Apples, 85 per cent; pears, 80 per cent; American plums, 89 per cent; domestica plums, 70 per cent; Japanese plums, 69 per cent; cherries, 83 per cent; peaches, 3 per cent; grapes, 80 per cent; red raspberries, 52 per cent; black raspberries, 53 per cent; blackberries, 65 per cent; strawberries, 86 per cent.

"Peach trees are badly injured in many places; raspberry canes are killed to the ground in some localities; climbing roses are also damaged. The injury to trees and plants is attributed to the freeze in October which caused the leaves to fall before the wood was mature; followed by warm, wet weather which pushed bud development on the defoliated plants too far in the fall to withstand the winter.

"Bloom on plum and cherry trees is two weeks in advance of 1871, the earliest record we have since the Society was organized."

WIND STORMS IN DES MOINES.

A small tornado passed over the northwestern part of the city of Des Moines shartly after 11 o'clock on the night of the 3d, which did considerable damage to several dwellings and small outbuildings. The storm struck and unroofed the residence of E. A. Paul, No. 4106 Kingman avenue, then passed diagonally across the street north of east, striking and blowing the roof off the residence of Charles Barchaus, No. 4003 Kingman avenue. The storm track was very narrow as buildings on the adjacent lots of either side of Mr. Paul's house were not injured, and the path of destructive violence was only about 400 feet long. There was, however, some slight damage done to trees and small outbuildings on the north side of the main track of the storm. Some thunder and lightning accompanied the storm and it was preceded by the typical roar of a tornado. No one was injured and the damage done was estimated to be less than $5,000.00.

MAY.

The weather was abnormally cold, and except over the extreme southern counties was unusually dry. The temperature was uniformally low, there being only four or five days during the month when the daily mean was above the normal and on those days the excess was very slight. There are very few, if any cases on record in the State where the monthly maximum temperatures for May were as low as during the past month. Freezing temperature occurred on one or more days in nearly all parts of the State but as practically all the fruit was killed during the April freeze, there was little damage done.

The rainfall was well distributed throughout the month but the monthly, weekly and daily amounts were small and below the normal for May except in the southern counties where there was an excess during the week from the 15th to the 21st inclusive, which brought the monthly amounts for that district, slightly above the normal. There were less than the usual number of thunderstorms and wind-squalls.

Owing to poor seed and continuous cold weather much of the corn failed to germinate and over 50 per cent of the corn acreage was planted the second and in many fields the third time, but with all the extra work there will not be over 65 to 75 per cent of an average stand; cut and wire worms were very active, especially on sod ground and the damage wrought by these insects has aided in cutting down the stand. The cold weather also prevented the normal growth of all vegetation and the drouthy conditions over the larger part of the State has seriously reduced the prospects of an average hay crop. Pasturage is short but the grass is of better quality than usual at the end of May. Small grains have made steady but slow improvement and are generally in good condition.

The shade and fruit trees that lost their foliage by the severe freeze in April have put forth new leaves and at the end of the month are about as far advanced as they were on April 15th.

The near approach of Halley's Comet to the earth on the 18th caused no unusual meteorological phenomena.

TEMPERATURE.—The monthly mean temperature for the State, as shown by records of 115 stations, was 55.4°, which is 4.7° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 54.1°, which is 4.4° below the normal; Central section 55.8°, which is 4.4° below the normal; Southern section 56.4°, which is 5.2° below the normal. The highest monthly mean was 59.0°, at Keokuk, Lee county, Ottumwa, Wapello county, and Grinnell, Poweshiek county, and the lowest monthly mean 52.0°, at Sibley, Osceola county. The highest temperature reported was 89°, at Mt. Pleasant, Henry county, on the 21st; the lowest temperature reported was 18°, at Washta, Cherokee county, on the 3d. The average monthly maximum was 81°, and the average monthly minimum was 30°. The greatest daily range was 50°, at Sheldon, O'Brien county. The average of the greatest daily ranges was 39°.

PRECIPITATION.—The average precipitation for the State, as shown by the records of 122 stations, was 3.41 inches, which is 1.09 inches below the normal. By sections the averages were as follows: Northern section, 2.59 inches, which is 1.96 inches below the normal; Central section, 3.05 inches, which is 1.42 inches below the normal; Southern section, 4.58 inches, which is 0.11 inch above the normal. The greatest amount, 6.91 inches occurred at Lamoni, Decatur county, and the least, 1.29 inches, at Plover, Pocahontas county. The greatest amount in twenty-four hours, 2.99 inches, occurred at Keokuk, Lee county, on the 1st and 2d. Measurable precipitation occurred on an average of 10 days.

Traces of snowfall occurred at four widely scattered stations.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 15; partly cloudy, 7; cloudy, 9. The duration of sunshine was about the normal, the percentage of the possible amount being 77 at Charles City, 68 at Davenport; 55 at Des Moines; 64 at Dubuque; 60 at Keokuk, and 51 at Sioux City.

WIND.—Northwest winds prevailed. The highest velocity reported was 38 miles per hour from the east, at Sioux City, Woodbury county, on the 1st.

CONDITION OF FRUIT TREES.

The secretary of the State Horticultural Society reports the condition of fruit, on May 1st, as follows: "Apples, 8 per cent; pears, less than 1 per cent; American plums, 1 per cent; domestica plums, Japanese plums, and peaches, less than 1 per cent; cherries, 6 per cent; grapes, 20 per cent; red raspberries, 10 per cent; black raspberries, 12 per cent; blackberries, 21 per cent; currants, 5 per cent; gooseberries, 4 per cent; strawberries, 38 per cent of a full crop.

"The average for May is only 9 per cent of a full crop. This is the lowest percentage ever estimated for May on the condition of the crop in this State. The bloom on tree fruits was three weeks in advance of normal; two weeks earlier than any record we have since the society was organized.

"When new growth starts we believe conditions will improve, and as the season advances we may be able to harvest at least a third to a half crop, especially of small fruits."

JUNE.

The most notable climatic features of June were the unusually cool weather during the first half of the month, and the continuously high temperatures during the latter half; the excessive amount of sunshine; the low percentage of humidity; the great deficiency of rainfall, the light wind velocities, and the small number of thunderstorms. The temperature was abnormally low during the first 14 days, and then changed within three days to excessively warm and continued so during the remainder of the month. The deficiency of temperature during the first half of the month, however, nearly equalled the excess during the latter half as the monthly mean was only 0.7° above the normal. At many stations the record for the number of days with a maximum temperature of 90°, or higher, was broken; there being from 9 to 11 days with temperature up to or above 90°, and the average of the maximum temperatures for the last 15 days of the month was above 90°.

The past month was the driest June on record since statewide observations began in 1890. The average rainfall was only 1.99 inches which is 2.53 inches below the normal, and .68 inch less than the average for June, 1894, which was the driest June on record prior to the past month. Showers were frequent during the first 10 days, over the western and central sections of the state but after the 10th the rainfall was light and unevenly distributed; the western counties receiving the larger amounts. In the eastern part of the state the rainfall was light during the entire month.

Corn made very slow growth during the first half of the month and owing to poor seed, cold weather and the activity of the moles and cut and wire worms, much more replanting was done than usual. During the latter half of the month, however, corn made very rapid growth and was nearly up to the normal stage of growth at the end of the month. The dry weather and intense sunshine were exceptionally favorable for killing weeds and the fields were never cleaner at the end of June than they were this year. The soil was in the very best of condition to withstand the effect of dry weather. Small grains made considerable advancement and at the close of the month were in good condition and filling and ripening nicely. On the whole June was a favorable month, though the condition of all crops at its close was somewhat below the average of the past 10 years; hay, pasturage and early potatoes receiving the greatest damage from the drouthy conditions.

TEMPERATURE. The monthly mean temperature for the state, as shown by the records of 115 stations, was 69.5°, which is 0.7° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 68.8°, which is 1.4° above the normal; Central section, 69.8°, which is 0.8° above the normal; Southern section, 69.9°, which is 0.1° below the normal. The highest monthly mean was 73.8°, at Tipton, Cedar county, and the lowest monthly mean, 66.6°, at Sibley Osceola county. The highest temperature reported was 105°, at Decorah, Winneshiek county, on the 29th; the lowest temperature reported was 33°, at Northwood, Worth county, and at Sibley, Oscola county, on the 5th. The average monthly maximum was 96°, and the average monthly minimum was 41°. The greatest daily range was 46° at Elkader, Clayton county; Greene, Butler county, and at Mount Pleasant, Henry county. The average of the greatest daily ranges was 37°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 125 stations, was 1.99 inches, which is 2.53 inches below the normal. By sections the averages were as follows: Northern section, 2.11 inches, which is 2.46 inches below the normal. Central section, 2.12 inches, which is 2.25 inches below the normal; Southern section, 1.74 inches, which is 2.88 inches below the normal. The greatest amount, 5.51 inches, ocurred at Estherville, Emmet county, and the least, 0.05 inch, at Decorah, Winneshiek county. The greatest amount in twenty-four hours, 2.23 inches, occurred at Rockwell City, Calhoun county, on the 26th. Measurable precipitation occurred on an average of seven days. No snow fell at any station in the state during the month.

Sunshine and Cloudiness.—The average number of clear days was 18; partly cloudy, 7; clody, 5. The duration of sunshine was above the normal, the percentage of the possible amount being 84 at Charles City; 81 at Davenport; 66 at Des Moines; 82 at Dubuque; 75 at Keokuk, and 68 at Sioux City.

Wind.—Southeast winds prevailed. The highest velocity reported was 46 miles per hour, from the south, at Sioux City, Woodbury county, on the 15th.

JULY.

The droughty conditions that prevailed over the latter half of June, continued over the larger part of the state during the entire month of July. The average rainfall was only 1.87 inches, or 2.59 inches below the normal. July, 1894, was drier than the past month, but the total precipitation for the first seven months of 1894 was 12.25 inches as compared with 10.94 inches for the same months this year. The total deficiency of precipitation from January 1, to July 31, 1910, was 9.38 inches, which is the greatest on record in the state for a like period. Showers, although quite frequent, were badly distributed as to time and locality, except over the northwestern counties where they came at frequent intervals and the amount of rainfall was sufficient to keep the crop conditions above the normal for that season of the year. In the northeastern and some localities in the central and southwestern counties, showers were few and widely scattered and the rainfall light.

The average temperature was only 1.1° above the normal, but July, 1910, will be remembered as a hot month. The day temperatures were higher than usual, but the night temperatures were, with a few exceptions, low. Temperatures in excess of 100° were recorded in the northeastern counties on the 15th and 16th; in the southeastern counties on the 24th, and in the southwestern counties on the 27th. The month, as a whole, was in many respects ideal for agricultural pursuits. There were very few if any wind storms, and while it was excessively dry over the larger part of the state, the clear weather was very beneficial for haying, harvesting and threshing. Hay and all small grain was secured in excellent condition and, although the hay crop was lighter than usual, it was of the very best quality. The yield of small grain was above the average and the quality is also excellent. Corn made rapid growth and at the end of the month was strong and vigorous and earing nicely except in the northeastern and some localities in the central and southwestern counties, where the drought has been the most severe. Pastures and potatoes were, however, severely damaged by lack of moisture. Pastures were practically bare and early potatoes are nearly a failure. Small streams and shallow wells were dry and the stage of the rivers was lower than for many years.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 112 stations, was 74.5°, which is 1.1° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 73.1°, which is 1.0° above the normal; Central section, 74.8°, which is 1.1° above the normal; Southern section, 75.6°, which is 1.1° above the normal. The highest monthly mean was 79.2°, at Tipton, Cedar county, and the lowest monthly mean, 69.8°, at Sibley, Osceola County. The highest temperature reported was 108°, at Ridgeway, Winneshiek County, on the 16th; the lowest temperature reported was 43°, at Woodburn, Clarke County, on the 19th. The average of the monthly maxima was 97°, and the average of the monthly minima was 50°. The greatest daily range was 47°, at Woodburn, Clarke County. The average of the greatest daily ranges was 37°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 120 stations, was 1.86 inches, which is 2.58 inches below the normal. By sections the averages were as follows: Northern section, 1.85 inches, which is 2.43 inches below the normal; Central section, 1.57 inches, which is 2.94 inches below the normal; Southern section, 2.16 inches, which is 2.38 inches below the normal. The greatest amount, 5.69 inches, occurred at Keosauqua, Van Buren County, and the least, 0.12 inch, at New Hampton, Chickasaw County. The greatest amount in twenty-four hours, 3.52 inches, occurred at Keosauqua, Van Buren County, on the 29th. Measurable precipitation occurred on an average of seven days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 19; partly cloudy, 8; cloudy, 4. The duration of sunshine was slightly above the normal, the percentage of the possible amount being 88 at Charles City; 80 at Davenport; 62 at Des Moines; — at Dubuque; 69 at Keokuk, and 71 at Sioux City.

WIND.—Southwest winds prevailed. The highest velocity reported was 54 miles per hour from the south, at Sioux City, Woodbury County, on the 7th.

AUGUST.

The droughty conditions which had prevailed since May, continued until the middle of August, when copious and fairly well distributed showers occurred; and during the latter half of the month the rainfall was generally above the normal which gave an excess for the month over the northern and central districts. There was a deficiency in the southern district, notwithstanding the fact that the heaviest rainfall in the state was reported from the southwestern counties. At Atlantic, 4.97 inches of rain fell between 2 a. m. and 10 a. m. of the 13th, and 4.03 inches fell between 3 p. m. of the 28th and 7:30 a. m. of the 29th. At Pacific Junction

7.98 inches fell between 6 p. m. of the 28th and 7 a. m. of the 29th. At several stations in the central portion of the southern district the total rainfall for the month was less than half an inch.

The temperature was very nearly normal; there being a positive departure of only 0.1°. The month as a whole was considered cool although on the 1st, 11th, 12th, 21st and 22d the day temperatures were generally above 90°, and at several stations were up to 100° on the 1st or the 22d. The night temperatures were moderately low during the most of the month; the lowest being on the 26th, when minimum temperatures below 40° were recorded at several stations. The lowest temperature reported was 36°, at Plover, Washta and Woodburn. A trace of frost was observed on the morning of the 26th on low ground in some localities, but no damage was done to vegetation.

The dry weather during the first half of the month was favorable for threshing, but was injurious to pastures, meadows and late potatoes, and in some sections, to corn. Over the northeastern and some of the central and southwestern counties, where the showers did not come at the proper time, corn was injured to some extent, but for the state at large, the crop held its own remarkably well and was in fine condition at the close of the month. The rains during the latter half of the month were very beneficial to pastures, meadows, potatoes and late corn, and at the close of the month the indications were favorable for more than an average yield of corn, in spite of the long continued drought.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 114 stations, was 71.9°, which is 0 1° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 70.3°, which is the normal; Central section, 72.3°, which is 0.4° above the normal; Southern section, 73.1°, which is 0.2° below the normal. The highest monthly mean was 75.2°, at Ottumwa, Wapello County, and the lowest monthly mean, 66.8°, at Sibley, Osceola County. The highest temperature reported was 104°, at Bedford, Taylor County, on the 22d; the lowest temperature reported was 36°, at Plover, Pocahontas County, Washta, Cherokee County, and Woodburn, Clarke County, on the 26th. The average monthly maximum was 96°, and the average monthly minimum was 43°. The greatest daily range was 47°, at Decorah, Winneshiek county, and at Elkader, Clayton County. The average of the greatest daily ranges was 36°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 124 stations, was 3.88 inches, which is 0.11 inch below the normal. By sections the averages were as follows: Northern section, 3.80 inches, which is 0.28 inch above the normal; Central section, 4.51 inches, which is 0.46 inch above the normal; Southern section, 3.32 inches, which is 1.08 inches below the normal. The greatest amount, 11.22 inches, occurred at Atlantic, Cass County, and the least, 0.37 inch, at Chariton, Lucas County. The greatest amount in twenty-four hours, 7.98 inches, occurred at Pacific Junction, Mills County, on the 28th and 29th. Measurable precipitation occurred on an average of eight days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 15; partly cloudy, 10; cloudy, 6. The duration of sunshine was slightly below the normal, the percentage of the possible amount being 75 at Charles City; 70 at Davenport; 60 at Des Moines; 54 at Dubuque; 63 at Keokuk, and 74 at Sioux City.

WIND.—South winds prevailed. The highest velocity reported was 65 miles per hour from the north, at Sioux City, Woodbury County, on the 2d.

SEPTEMBER.

Although the mean temperature was below and the average rainfall was above the normal, the month was very favorable for farm operations and other outdoor pursuits and for maturing the late crops.

The average temperature was only 0.5° below the normal, and the deficiency was quite uniform over the state. The 17th was generally the warmest day, when maximum temperatures of 90° or above were recorded at most stations over the southern half of the State. The highest recorded during the month, 99°, occurred, however, at Creston on the 15th. The 2d, 5th, 7th, 11th, 18th and 30th were also warm days. The coolest days of the month were the 9th, 10th and 27th. Light frost occurred at several stations, on low ground, on the 9th and 10th, and heavy to killing frost on the 27th. Freezing temperatures occurred at several stations in the extreme western counties on the latter date, but no material damage was done except to tender vines and garden truck as the low temperature was of short duration and the corn was generally far enough advanced toward maturity to escape injury.

The precipitation was well distributed throughout the month and fairly well distributed geographically although the largest amounts were recorded in the western, central and south central counties, and the heaviest showers occurred on the 15, 22, 23, or 26th, when excessive amounts were recorded at several stations. The rains have revived pasturage and aftermath in meadows, replenished the water supply for stock, put the soil in fine condition for plowing and started the growth of fall sown grain. Threshing was practically finished and more seed corn was gathered than ever before during the month of September. There has been a decided increase in the acreage sown to winter grains, especially fall wheat. Fall pasturage is in excellent condition and much more than the usual amount of corn has been cut for fodder and ensilage on account of the shortage in the hay crop. Late potatoes were materially benefited by the August and early September rains, but the crop will be short.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 113 stations, was 63.2°, which is 0.5° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 61.4°, which is 0.7° below the normal; Central section, 63.3°, which is 0.3° below the normal; Southern section, 64 8°, which is 0.7° below the normal. The highest monthly mean was 67.4°, at Ottumwa, Wapello

County, and the lowest monthly mean, 58.6°, at Estherville, Emmet County. The highest temperature reported was 99°, at Creston, Union County, on the 15; the lowest temperature reported was 30°, at Sheldon, O'Brien County, on the 27th; and at Woodburn, Clarke County, on the 10th. The average monthly maximum was 88°, and the average monthly minimum was 36°. The greatest daily range was 49°, at Creston, Union County; and at Corning, Adams County. The average of the greatest daily ranges was 38°.

Precipitation.—The average precipitation for the state, as shown by the records of 122 stations, was 3.59 inches, which is 0.18 inch above the normal. By sections the averages were as follows: Northern section, 2.90 inches, which is 0.51 inch below the normal; Central section, 4.04 inches, which is 0.80 inch above the normal; Southern section, 3.84 inches, which is 0.27 inch above the normal. The greatest amount, 7.43 inches, occurred at Afton, Union County, and the least, 1.18 inches, at Elma, Howard County. The greatest amount in twenty-four hours, 3.76 inches, occurred at Afton, Union County, on the 16th. Measurable precipitation occurred on an average of 9 days.

Sunshine and Cloudiness.—The average number of clear days was 14; partly cloudy, 7; clody, 9. The duration of sunshine was slightly below the normal, the percentage of the possible amount being 67 at Charles City; 63 at Davenport; 53 at Des Moines; 54 at Dubuque; 50 at Keoukuk; and 60 at Sioux City.

Wind.—South winds prevailed. The highest velocity reported was 39 miles per hour from the northwest, at Sioux City, Woodbury County, on the 4th.

OCTOBER.

October, 1910, was unusually warm and pleasant even for Iowa where Indian Summer weather generally prevails at that time of the year. It was the warmest October since 1900 and the driest since 1895, and there have been only three warmer months of that name during the past 21 years. With the exception of light showers between the 3d and 5th, clear and generally warm weather prevailed until the 18th with 4 partly cloudy and only 6 cloudy days during the month. The 2d was generally the warmest day, but at a few stations the highest temperature for the month was recorded on the 10, 11, 15 or 16th. A cool wave passed over the state on the 6th and 7th that caused light frost in all sections and freezing temperatures at some stations in the extreme northern counties, but no damage resulted to crops. The temperature was abnormally high between the 11th and 18th, during which time the daily maximum temperatures were very near or above 80° in all parts of the state and the weather was clear and balmy. Light rain began in the western counties during the late afternoon of the 18th, spreading over the state on the 19th, 20th and 21st, with a decided drop in temperature which resulted in freezing temperatures and killing frosts in northern and western counties on the 22d and heavy frost over the southeastern counties, but the coldest period of the month was on the 28th and the 29th when the minimum temperatures were below the freezing point and killing frost occurred at all stations. The first snow of the season fell in the form of light flurries on the 27th and 28th.

The warm, dry weather was very favorable for ripening the corn crop, finishing threshing, digging potatoes and for all outdoor operations, except that the soil was too dry for satisfactory plowing and in many places the surface water supply was scarce and the water in shallow wells was low. Corn-husking began during the third week and became general during the fourth week of the month. The large acreage of fall wheat was in excellent condition at the close of the month. Home-grown strawberries were on the market at Dubuque until the closing week of October and a few boxes were picked at some time during the month at many places in the eastern and southern counties.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 113 stations, was 55.2°, which is 3.3° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 53.7°, which is 3.6° above the normal; Central section, 55.3°, which is 3.5° above the normal. Southern section, 56.6°, which is 2.8° above the normal. The highest monthly mean was 60.1°, at Ottumwa, Wapello County, and the lowest monthly mean was 51.7°, at Northwood, Worth County. The highest temperature reported was 93°, at Inwood, Lyon County, on the 10th, and at Ottumwa, Wapello County, on the 16th; the lowest temperature reported was 10°, at Woodburn, Clarke County, on the 29th. The average monthly maximum was 86°, and the average monthly minimum was 18°. The greatest daily range was 56°, at Keosauqua, Van Buren County, on the 30th. The average of the greatest daily ranges was 40°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 122 stations, was 0.77 inch, which is 1.58 inches below the normal. By sections the averages were as follows: Northern section, 0.81 inch, which is 1.46 inches below the normal; Central section, 0.77 inch, which is 1.67 inches below the normal; Southern section, 0.74 inch, which is 1.61 inches below the normal. The greatest amount, 1.73 inches, occurred at Fort Dodge, Webster County, and the least, a trace, at Chariton, Lucas County. The greatest amount in twenty-four hours, 1.32 inches, occurred at Fort Dodge, Webster county, on the 19th. Measurable precipitation occurred on an average of 4 days.

SNOW.—The average depth of unmelted snowfall was 0.1 inch, nearly all stations reported at least a trace; the greatest depth was 2.0 inches, at Algona, Kossuth County.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 21; partly cloudy, 4; cloudy, 6. The duration of sunshine was about 10 per cent above the normal, the percentage of the possible amount being 71 at Charles City; 72 at Davenport; 73 at Des Moines; 66 at Dubuque; 72 at Keoukuk, and 77 at Sioux City.

WIND.—South winds prevailed. The highest velocity reported was 46 miles per hour from the north, at Sioux City, Woodbury County, on the 27th.

NOVEMBER.

There was a great contrast between the weather in November, 1909, and November, 1910. Last year both the temperature and precipitation were decidely above the normal which was unprecedented; the average temperature being 6.5° above and the average precipitation, 4.00 inches above the normal. The snowfall was also much above the normal, the monthly amounts ranged from 8 to 29.5 inches. The heavy rains caused high stages in all streams and rivers and much of the bottom lands were flooded and the heavy snow prevented the harvesting of about 35 per cent of the corn crop.

The weather during November, 1910, was, on the whole, very pleasant and exceptionally favorable for outdoor work, the temperature and the precipitation both being below the normal. The deficinecy of temperature was, however, due to uniformly low maxima rather than to abnormally low minimum temperatures. In fact, the minimum tmperatures were above the normal and while there were several days on which moderately low temperature prevailed in some parts of the state, the first general cold wave of the season did not occur until the last day of the month.

The precipitation was much below the normal at all stations except at Cumberland, Cass County, where there was a slight excess due to a heavy shower of rain on the 4th when 1.02 inches fell. The average snowfall was also much below the normal and 18 of the 121 reporting stations did not have even a trace of snow during the month.

Owing to the dry weather, rapid progress was made in gathering the corn crop and at the end of the month about 90 per cent of the crop had been harvested and the corn was in unusually good condition. Dry weather has not been favorable for pasturage and fall grain and the latter is not in as good condition as it was at the close of November, 1909.

All streams and shallow wells are abnormally low and the scarcity of water is becoming serious in many sections. Press dispatches indicate that several railroads are experiencing considerable trouble in supplying their engines with water. Some of the reservoirs along the line of the Burlington road are dry or nearly so, and many trains have been carrying two tenders with which to supply the water, one being entirely inadequate where such a great distance has to be covered between the water stations. The Iowa Central railroad has also experienced considerable trouble, engines are barely able to make terminals for water, the supply in the smaller towns along the line having become exhausted. This is especially true over the southeastern divisions of the road.

TEMPERATURE.—The monthly mean temperature for the state, as shown by the records of 113 stations, was 33.°, which is 2.5° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 30.9°, which is 2.8° below the normal; Central section. 33.5°, which is 2.2° below the normal; Southern section, 35.9° which is 2.3° below the normal. The highest monthly mean was 38.4°, at Council Bluffs, Pottawattamie County, and the lowest monthly mean, 28.0°, at Estherville, Emmet County. The highest temperature reported was 76°, at Council Bluffs, Pottawattamie County, on the 8th; the lowest temperature reported was 5°, at Jefferson, Greene county, on the 3d. The average monthly maximum was 61°, and the average monthly minimum was 12°. The greatest daily range was 54°, at Council Bluffs, Pottawattamie County. The average of the greatest daily ranges was 35°.

Precipitation.—The average precipitation for the state, as shown by the records of 121 stations, was 0.34 inch, which is 1.05 inches below the normal. By sections the averages were as follows: Northern section, 0.22 inch, which is 1.09 inches below the normal; Central section, 0.35 inch, which is 1.08 inches below the normal; Southern section, 0.45 inch, which is 0.99 inch below the normal. The greatest amount, 1.03 inches, occurred at Cumberland, Cass County, and the least, a trace at Carroll, Carroll County, Chariton, Lucas County, Denison, Crawford County, Forest City, Winnebago County, Sac City, Stuart, Guthrie County, and at Whitten, Hardin County. The greatest amount in twenty-four hours, 1.02 inches, occurred at Cumberland, Cass County, on the 4th. Measurable precipitation occurred on an average of 3 days.

Snow.—The average depth of unmelted snowfall was 0.7 inch. The greatest depth was 3.8 inches, at Ridgeway, Winneshiek County; 18 of the 121 reporting stations had no snow during the month.

Sunshine and Cloudiness.—The average number of clear days was 13; partly cloudy, 9; cloudy, 8. The duration of sunshine was slightly below the normal, the precentage of the possible amount being 47 at Charles City; 45 at Davenport; 56 at Des Moines; 50 at Dubuque; 44 at Keokuk; and 56 at Sioux City.

Wind.—Northwest winds prevailed. The highest velocity reported was 49 miles per hour from the southeast, at Sioux City, Woodbury County, on the 3d.

Thunderstorms occurred as follows: At Pacific Junction on the 20th; at Clinton, Fort Madison, and at Ridgeway on the 26th; at Amana, Delaware, Elkader, Grand Meadow, and at Independence, on the 27th; and, at Dubuque on the 26th and 27th.

DECEMBER.

December, 1910, will go on record as the driest month of that name on record since state-wide observations began in 1890. The average precipition was only 0.37 inch, which is 0.82 inch below the normal and 1.81 inches less than the average amount in December, 1909. Except over the southeastern counties where rain fell on the 28th or 29th, nearly all of the precipitation was in the form of snow and most of it fell on the 5th, 6th, 9th, 10th, 18th and 22d, but the amounts were too small to afford any relief from the effects of the long continued drouth and at the close of the month the ground was bare except over the northern counties where the snow was about 2 inches in depth.

The mean temperature was very nearly normal, there being a deficiency of only 0.2 of a degree. The month was characterized by the uniformly moderately low temperatures and the absence of severe storms, and to the fact that there were only one or two cold waves. The 8th and 24th were the coldest days but the temperature on those dates was only 2 or 3 degrees below zero in the southern and from 5 to 14 degrees below in the northern counties.

The weather was ideal for finishing the corn harvest and all of the crop was secured in excellent condition. Cattle lived in the pastures and stalk fields nearly all of the month, thereby, allowing a great saving of hay and grain. The dry weather has not, however, been favorable for fall wheat or young August sown alfalfa, and the drouth has caused many shallow wells and small streams to go dry. The scarcity of water has been serious in many localities, and in some instances farmers have been obliged to sell their stock on account of lack of facilities for watering it.

Temperature.—The monthly mean temperature for the State, as shown by the records of 117 stations, was 23.4°, which is 0.2° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 20.9°, which is normal; Central section, 23.5°, which is 0.3° below normal; Southern section, 25.7°, which is 0.5° below the normal. The highest monthly mean was 28.8°, at Keokuk, Lee County, and the lowest monthly mean, 18.2°, at Elma, Howard County, and Forest City, Winnebago County. The highest temperature reported was 57°, at Baxter, Jasper County, on the 26th; the lowest temperature reported was—14°, at Britt, Hancock County, on the 24th. The average monthly maximum was 50°, and the average monthly minimum was —5°. The greatest daily range was 54°, at Iowa City, Johnson County, and at Keosauqua, Van Buren County. The average of the greatest daily ranges was 36°.

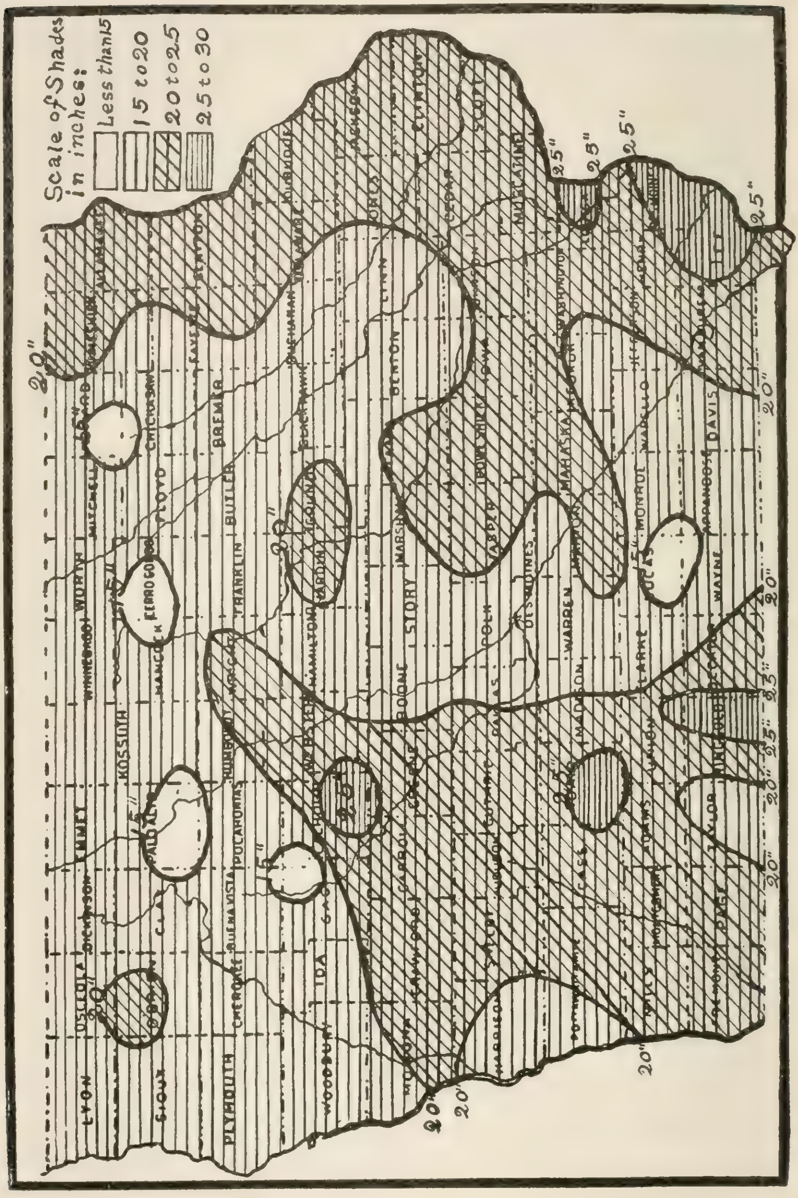
Precipitation.—The average precipitation for the State, as shown by the records of 123 stations, was 0.37 inch, which is 0.82 inch below the normal. By sections the averages were as follows: Northern section, 0.32 inch, which is 0.71 inch below the normal; Central section, $0.38 inch, which is 0.32 inch below the normal; Southern section, 0.41 inch, which is 0.92 inch below the normal. The greatest amount, 1.39 inches, occurred at Burlington, Des Moines County, and the least, 0.01 inch, at LeMars, Plymouth County. The greatest amount in twenty-four hours, 1.12 inches, occurred at Burlington, Des Moines County, on the 28th. Measurable precipitation occurred on an average of 3 days.

Snow—The average depth of unmelted snowfall was 3.0 inches. By sections the averages were as follows: Northern section, 3.5 inches; Central section, 3.2 inches; Southern section, 2.2 inches. The greatest depth was 8.0 inches at Elkader, Clayton County; and the least, 0.1 inch, at LeMars, Plymouth County.

Sunshine and Cloudiness.—The average number of clear days was 15; partly cloudy, 7; cloudy, 9. The duration of sunshine was about the normal, the percentage of the possible amount being 55 at Charles City; 58 at Davenport; 54 at Des Moines; 50 at Dubuque; 64 at Keokuk; and 47 at Sioux City.

Wind.—Northwest winds prevailed. The highest velocity reported was 44 miles per hour from the south, at Sioux City, Woodbury County, on the 30th.

ANNUAL PRECIPITATION CHART, 1910.


Scale of Shades in inches:
Less than 15
15 to 20
20 to 25
25 to 30
20"
15"
25"
30"

DATES OF KILLING FROSTS, 1910.

STATIONS	Killing Frosts		STATIONS	Killing Frosts		STATIONS	Killing Frosts	
	Last in Spring	First in Autumn		Last in Spring	First in Autumn		Last in Spring	First in Autumn
Afton	April 25	Oct. 22	Elma	May 14	Oct. 6	Northwood	May 5	Oct. 22
Albia	April 26	Oct. 22	Estherville	May 26	Oct. 6	Odeboldt	May 13	Oct. 22
Algona	May 13	Oct. 6	Fairfield	April 25	Oct. 21	Olin	May 14	Oct. 22
Allerton	April 25	Oct. 22	Fayette	May 26	Oct. 6	Omaha, Neb.	April 24	Oct. 28
Alta	May 4	Oct. 21	Forest City	May 4	Oct. 6	Onawa	May 4	Oct. 22
Alton	May 13	Sept. 27	Fort Dodge	May 4	Oct. 6	Osage	May 5	Oct. 22
Amana	May 5	Oct. 22	Grand Meadow	May 5	Oct. 22	Oskaloosa	May 14	Oct. 22
Ames	May 14	Oct. 22	Greene	May 14	Oct. 22	Ottumwa	April 25	Oct. 22
Atlantic	May 4	Sept. 27	Greenfield	May 13	Oct. 22	Pacific Junction	May 13	Oct. 22
Audubon	May 4	Oct. 22	Grinnell	April 24	Oct. 22	Pella	May 13	Oct. 22
Baxter	May 13	Oct. 22	Grundy Center	May 4	Oct. 22	Perry	May 13	Oct. 22
Bedford	May 13	Oct. 22	Guthrie Center	May 4	Oct. 22	Plover	May 13	Oct. 6
Belle Plaine	May 4	Oct. 22	Hampton	May 4	Oct. 22	Pocahontas	May 13	Oct. 22
Belmond	May 13	Oct. 22	Hancock	May 13	------------	Ridgeway	May 5	Oct. 22
Bonaparte	April 25	Oct. 22	Harlan	May 13	Oct. 22	Rock Rapids	------------	Sept. 27
Boone	May 3	Oct. 22	Hopeville	April 25	Oct. 22	Rockwell City	May 13	Oct. 22
Britt	May 13	Oct. 6	Humboldt	May 26	Oct. 21	Sac City	May 4	Oct. 21
Burlington	April 28	Oct. 28	Independence	May 14	Oct. 22	Saint Charles	April 25	Oct. 22
Carroll	May 12	Oct. 21	Indianola	May 12	Oct. 22	Sheldon	May 16	Oct. 21
Cedar Rapids	April 25	Oct. 22	Inwood	May 25	Sept. 27	Sibley	May 13	Sept. 27
Chariton	May 13	Oct. 22	Iowa City	April 25	Oct. 22	Sigourney	May 13	Oct. 22
Charles City	May 4	Oct. 22	Iowa Falls	May 14	Oct. 6	Sioux Center	May 13	Sept. 27
Clarinda	April 26	Oct. 22	Jefferson	------------	Oct. 6	Sioux City	May 3	Oct. 22
Clear Lake	May 5	Oct. 26	Keokuk	April 25	Oct. 22	Stockport	May 5	Oct. 22
Clinton	May 5	Oct. 22	Keosauqua	May 5	Oct. 22	Storm Lake	May 4	Oct. 22
Columbus Junction	April 25	Oct. 22	Knoxville	April 25	Oct. 22	Stuart	------------	Oct. 22
Corning	May 13	Oct. 22	Lamoni	April 25	Oct. 22	Thurman	May 13	Sept. 27
Corydon	April 25	Oct. 22	Larrabee	May 13	Oct. 21	Tipton	April 25	Oct. 28
Council Bluffs	------------	Oct. 6	Le Mars	May 13	Oct. 22	Toledo	April 25	Oct. 22
Creston	May 13	Oct. 22	Lenox	May 13	Oct. 22	Wapello	April 25	Oct. 28
Davenport	April 25	Oct. 29	Leon	April 25	Oct. 22	Washington	May 13	Oct. 22
Decorah	May 14	Oct. 6	Little Sioux	May 13	Oct. 22	Washta	May 25	Oct. 22
Delaware	May 5	Oct. 22	Logan	May 29	Sept. 27	Waterloo	May 4	Oct. 28
Denison	May 13	Oct. 6	Marshalltown	May 5	Oct. 22	Waukee	May 3	Oct. 22
Des Moines	April 24	Oct. 22	Mason City	May 14	Oct. 6	Waverly	May 5	Oct. 22
De Soto	May 26	Oct. 22	Massena	May 13	------------	Webster City	May 14	Oct. 6
Dubuque	May 1	Oct. 29	Mount Ayr	April 25	Oct. 22	West Bend	May 13	Oct. 6
Earlham	May 14	Oct. 22	Mount Pleasant	April 25	Oct. 22	Whitten	May 13	Oct. 22
Elkader	May 13	Oct. 29	New Hampton	May 4	Oct. 22	Winterset	April 24	Oct. 22
Elliott	May 13	Oct. 22	Newton	------------	Oct. 22	Woodburn	May 14	Oct. 22

CLIMATE AND CROP REVIEW.

Crop Season of 1910.

Extremely low temperatures prevailed during the first decade of January, with two notably heavy snowstorms during the first half of the month. The first being on the 4th-5th and the second on the 12th-13th. The snowfall was unusually heavy and caused a great deal of delay in railroad traffic, and the accumulating of snow caused considerable damage to buildings, especially in the northern part of the state. The roofs of numerous structures collapsed as a result of the weight of snow; the damage to property in Dubuque being estimated at about $10 000. Snow flurries occurred at frequent intervals during the latter half of the month but the amounts of snow were small and only tended to prolong the good sleighing which began on December 5th or 6th, 1909. The ground was thoroughly covered with snow during the entire month in the northern, and most of the time in the southern districts, and as a result fall grains suffered no injury from the effects of the cold weather. The 6th and 7th were the coldest days, the lowest temperature occurring generally on the 6th, when the minimum ranged from —8° to —33° over the southern, and —18° to —35° over the northern counties.

The weather during February was exceptionally pleasant; there being no severe storms and a very small amount of precipitation. The average precipitation being only 0.46 inch which is 0.60 inch below the normal. At many sations it was the driest February in over 30 years. The temperature was, however, below the normal although the weather was moderate during most of the month. The ground was practically bare of snow over the southern counties, except from the 20 to the 24th, but over the northen counties the ground was covered with snow during the whole month. Some progress was made in gathering last year's corn but there was over 15 per cent of the crop left in the fileds at the close of the month.

March, 1910, will long be remembered as having furnished more pleasant weather than any other March in the history of the state. It was the warmest and driest March on record. It gave the largest amount of sunshine; the least number of clody days; the least number of days with appreciable precipitation; the least number of days with freezing temperature, and less snowfall than any other March since state-wide observations began. The temperature was uniformly high and above the normal every day of the month. The highest temperature occurred generally on the 23d, and ranged from 81° to 87° over the northern, 81° to 90° over the central, and from 82 to 92° over the southern counties. There was no snowfall in excess of a trace and the rainfall was abnormally light. On the 1st of the month there was 6 to 8 inches of snow on the ground in the northern part of the state, but it had all melted by the 9th, and as there was practically no frost in the ground the soil dried rapidly, and farmers were in the field early in the month gathering the remainder of last year's corn crop, plowing and seeding small grain. The greater portion of the corn was gathered by the 15th, and by the end of the month nearly all of the wheat and nearly 50 per cent of the oats had been seeded and considerable ground had been prepared for corn. The season at the close of the month was about 4 weeks in advance of the normal and from 5 to 6 weeks ahead of last year. Spring flowers were in bloom; elms, soft maples, and box elders were green or becoming so, even in the extreme northern part the state. Plum, cherry and apple trees were in bloom in the southern counties. Pastures and meadows were green, and some of the early sown grain was up before the end of the month. Fall grain, clover and alfalfa were generally in good condition, but there had been considerable damage by winter killing in western and southern districts.

The first half of April, like the whole of March, was dry and generally warm, but the latter half was very changeable and erratic; the temperatures fluctuating from one extreme to another, and the precipitation from rain to snow. A cold spell set in on the evening of the 14th, attended by moderate showers which changed to snow on the 15th and continued until the 18th, over the larger part of the state; the minimum temperatures on the 16th, 17th and 18th being from 3° to 12° below the freezing point in all districts, and the amounts of snowfall ranged from a trace in the southern to over 5 inches at some stations in the northeastern counties. The freezing temperatures severely damaged fruit, as apple, cherry and plum trees were in full bloom in the northern part of the state by the 10th of the month. The damage done, however, was small as compared with the damage resulting from the freeze of the 23d and 24th, when the minimum temperatures were 10° to 12° below the freezing point in the southern counties. The ground froze hard on the morning of the 23d and the 24th, and ice one inch thick formed in tubs of water. Few trees or shrubs escaped injury, and the foliage and new growth on some varieties, such as soft maples, box elders, wisteria, Virginia creeper, etc., were frozen and at the close of the month the dead leaves were falling off. After the 24th the temperature rose rapidly and the highest temperature ever recorded in the state during April was noted on the 28th, when the maximum temperatures ranged from 90° to 99° in the western counties. Practically all small grain was seeded and some corn planted before the middle of the month.

May was abnormally cold, and except over the extreme southern counties was unusually dry. Freezing temperatures occurred on one or more days in nearly all parts of the state, but as practically all the fruit was killed during April, there was little damage done. The rainfall was light and below the normal. Owing to poor seed (account of severe freezing weather on October 12th and 13th, 1909) and continuous cold weather, much of the corn failed to germinte and, notwithstanding the fact that many fields were re-planted the second and some the third time, the stand of corn was poor. The cold weather retarded the growth of vegetation and the drouthy conditions reduced the prospects of a hay crop. At the end of the month the foliage on shade and fruit trees was about as far advanced as on April 15th.

The most notable climatic features of June were the unusually cool weather during the first half, and the high temperatures during the latter half of the month; the excessive amount of sunshine; the low percentage of humidity; the great deficiency of rainfall; the high wind velocities, and the small number of thunderstorms. It was the driest June on record. Corn made slow growth during the first half of the month, and owing to poor seed, cold weather and the activity of moles, cut and wire worms, much more replanting was done than usual. During the latter half of the month corn made rapid growth as the fields were clean and the soil was in the best of condition to withstand the effects of dry weather. On the whole June was a favorable month. although the condition of all crops at its close was somewhat below the average of the past 10 years; hay, pastures and early potatoes showed the greatest damage from the drouthy conditions.

The drouthy condition that prevailed during the latter half of June continued over the larger part of the state during the entire month of July. but the month as a whole, was in many respects ideal for agricultural pursuits. There was very few windstorms, and while it was excessively dry over the larger part of the state, the clear weather was very beneficial for haying, harvesting and threshing. Hay and all small grain was secured in excellent condition. and although the hay crop was lighter than usual. it was of the very best quality. The yield of small grain was above the average and the quality was also excellent. Corn made rapid growth and at the end of the month was strong and vigorous and earing nicely. except in the northeastern and some localities in the central and southwestern counties where the drouth had been the most severe. Pastures and potatoes were, however, severely damaged by lack of moisture. Pastures were practically bare and early potatoes were nearly a failure. Small streams and shallow wells were dry and the stage of the rivers was lower than for many years.

The drouthy conditions which had prevailed since May, continued until the middle of August, when copious and fairly well distributed showers occurred. During the latter half of the month the rainfall was generally above the normal. The temperature was normal authough temperatures of 90° or above were recorded on several days between the 1st and 22d. A trace of frost was observed in some localities on the 26th, but no damage was done. The dry weather during the first half of the month was favorable for threshing. but was injurious to pastures. meadows and late potatoes, and in some sections, to corn.

Although the mean temperature was below and the average rainfall was above the normal, the month of September was favorable for farm operations and other outdoor pursuits and for maturing the late crops. Light frost occurred on low ground at several stations on the 9th and 10th and heavy frost on the 27th. Freezing temperatures occurred at several stations in the extreme western counties on the latter date. but no material damage was done except to tender vines and garden truck as the low temperature was of short duration and the corn was generally far enough advanced toward maturity to escape injury. The precipitation was slightly above the normal and fairly well distributed. The rains stimulated the growth of grass, replenished the water supply, put the soil in fine condition for plowing and started the growth of fall sown grain. Threshing was practically finished and more seed corn was gathered than ever before during the month of September.

October was unusually warm, dry and pleasant. Corn husking began during the third week and became general during the fourth week of the month. The temperature was sufficiently high to ripen strawberries in many localities. The first general killing frost with freezing temperatures did not occur until the 28th-29th.

November and December were pleasant and dry with the temperature slightly below the normal. The corn harvest was finished early in December and all of the crop was secured in excellent condition.

Notwithstanding the fact that 1910 was the driest year on record and the spring months were abnormal, the year as a whole was a profitable one to the farmers in the state. The yields of corn and small grain were considerably above the average but the yield of hay and potatoes were materially reduced by the drouthy conditions and practically all fruit was killed by the severe freezing temperatures in April.

COMPARATIVE DATA FOR THE STATE—ANNUAL.

	Temperature					Precipitation			
	Mean Annual	Highest	Date	Annual	Date	Annual	Greatest Annual	Deast Annual	Average Snow Fall
1890	48.0	110	July 13	—27	January 22	31.30	45.74	16.00	----
1891	47.3	106	August 9	—31	Febuary 4	32.90	49.05	23.48	----
1892	46.6	104	July 11	—38	January 19	36.58	48.77	24.78	34.2
1893	45.7	102	July* 13	—36	January 14	27.59	33.27	19.19	37.2
1894	49.7	109	July 26	—37	January 25	21.94	29.81	15.65	19.2
1895	47.2	104	May 28	—33	February 1	26.77	35.25	18.57	26.0
1896	48.6	104	July 3	—20	January 4	37.23	51.60	28.68	22.6
1897	47.8	106	July* 23	—30	January 25	26.98	36.18	20.21	38.8
1898	47.7	103	August 20	—25	December 31	31.34	55.47	19.51	40.3
1899	47.3	104	September 6	—40	February 11	28.68	42.06	21.79	23.4
1900	49.3	103	August 3	—27	February 15	35.05	47.33	25.05	25.8
1901	49.0	113	July 22	—31	December 15	24.41	37.69	16.35	38.5
1902	47.7	98	July 30	—31	January 27	43.82	58.80	20.14	28.0
1903	47.2	101	August 24	—27	December 13	35.39	50.53	26.41	19.4
1904	46.3	100	July 17	—32	January 27	28.51	38.93	19.34	29.2
1905	47.2	104	August 11	—41	February 2	36.56	52.26	24.66	38.3
1906	48.4	102	July 21	—32	February 10	31.60	44.34	20.63	32.8
1907	47.4	102	July 5	—31	February 5	31.61	43.90	19.93	24.0
1908	49.5	101	August 3	—18	January 29	35.26	49.98	24.11	22.7
1909	47.4	103	August* 15	—26	February* 15	40.01	53.48	27.20	49.0
1910	48.6	108	July 16	—35	January 7	19.87	27.99	12.11	23.4

* And other dates

ANNUAL NORMALS FOR IOWA.

1890—1910.

Normal annual temperature, 47.8°.
Warmest year, 1894, with mean temperatures of 49.7°.
Coldest year, 1893, with mean temperatures of 45.7°.
Normal annual precipitation, 31.58 inches.
Wettest year, 1902, with total precipitation of 43.82 inches.
Driest year, 1910, with total precipitation of 19.87 inches.
Average annual snowfall (unmelted), 30.1 inches.
Greatest annual snowfall, 49.0 inches in 1909.
Least annual snowfall, 19.2 inches in 1894.
Average number of days with 0.01 inch or more of precipitation, 82.
Prevailing wind, direction, northwest.
Average number of clear days, 164; partly cloudy, 104; clody, 97.

CLIMATE AND CROP BULLETINS.

Summaries of Weekly Bulletins Issued in the Season of 1910.

BULLETIN No. 1.—*Week Ending April 10, 1910.* After a winter of unusually heavy snowfall and steady cold weather, the crop season of 1910 opens under very favorable conditions, and from 4 to 5 weeks earlier than last year. The larger part of the state was covered with ice and snow from December 5, 1909, to the end of February, which afforded good protection to grasses and winter grains and prevented the soil from freezing. except on the surface. Although the snow melted rapidly during the last two or three days of February and the first week of March, most of the water was absorbed by the soil. The last month was the warmest and probably the dryest March in the history of the state. The temperature was continuously and, most of time, abnormally high; and as there was no snow and only a little rain, farm operations began much earlier than usual. The remaining 20 per cent of last year's corn crop was gathered. most of the spring wheat and fully 50 per cent of the oats were sown; plum trees were coming in bloom, many of the forest trees, pastures and meadows were green; much of the corn ground had been plowed; gardens made and some vegetables up by the end of the month.

Since the first of April the weather has continued favorable for farm work. The seeding of small grain is nearly completed and rapid progress has been made in preparing the ground for corn. During the last week the temperature was above the normal, although light frosts occurred on the 6th and 7th.

Copious sowers occurred over the southern and eastern counties, but fair weather continued over the northwestern districts, and in the latter sections the surface soil is becoming dry. Spring wheat and oats show a good stand except in western and northwestern counties, where oats sown broadcast and not well covered, are germinating unevenly. Winter grains, pastures and meadows are generally in good condition, but reports indicate some winter killing, especially in western and southern counties. The indications are favorable for an increased acreage of oats. Many potatoes have been planted. Good seed corn is scarce.

Bulletin No. 2.—*April 17.* The first half of the week was warm with occasional light to moderate, but well distributed showers. The latter part was much colder, ending with the temperature 8 to 15 degrees below the freezing point and general snow flurries. The precipitation was timely and very beneficial especially in western sections where drouthy conditions had prevailed for seven weeks, but there was not enough of it to materially interfere with field work until Saturday. As yet it is not possible to ascertain the extent of damage caused by freezing weather to fruits, garden truck and early seeded cereals, but fruits and garden truck are undoubtedly seriously injured. The soil is in fine working condition, and rapid progress was made in plowing and preparing for corn planting. Considerable corn was planted in nearly all sections of the state and some of it is up. Grass and all small grains were doing well until Saturday, but the snow and freezing temperature will check the growth of grass, and has to some extent injured the grain crops.

Bulletin No. 3.—*April 24.* The week opened and closed with abnormally cold weather; the minimum temperatures on four days were 3 to 12 degrees below the freezing point. The precipitation was decidedly below the normal and nearly all of it was in the form of snow. High winds and northwest gales prevailed on several days and there was a great deficiency of sunshine. In fact it was one of the most unfavorable weeks, from an agricultural standpoint, we have had in many years. Fruits and garden truck were practically all killed, except possibly some of the latest varieties. Reports vary as to whether or not small grain has been injured by the freezing weather, but there is no doubt but what the vitality of the plants has been seriously taxed, and their growth has been given a setback. The high winds certainly caused a great deal of damage to small grains, especially in the northwestern counties. Corn planting has been discontinued but fair progress has been made in preparing corn ground and 75 to 80 per cent of the plowing has been done. While pastures and meadows are in good condition, the grass is growing very slowly and warm soaking rains are needed at once to insure a normal hay crop.

Bulletin No. 4.—*May 1.* The fore part of the week was unseasonably cold, with freezing temperature and snow flurries over the larger part of the state, but Thursday and Friday were excessively hot with high winds. The maximum temperature of those days ranged from 90 to 98 degrees, which caused an excess of temperature for the week. The precipitation was very light and at many stations, especially in the western portion of the state, it was nil. Reports indicate that the hot, dry winds and general drouthy condition, following so closely after the severe freezing weather, are affecting the grass and small grain crops in the western districts where the drouth has been the most severe. But for the state at large, those crops are in good condition generally. Rain is, however, needed in all districts to soften the surface soil and to start the growth of the plants. The late varieties of fruit seem to have escaped serious damage from the recent freezing temperature and garden truck is recovering under the effect of warm weather. Practically all of the corn ground is ready for the planter, and planting will become general during the coming week. The season is still far in advance of the average and the general crop outlook is very promising.

BULLETIN No. 5.—*May 8.* The past week was unseasonably cool, with less than the usual amount of sunshine. The daily average temperature was about 8 degrees below the normal; light frosts were reported in the southern, and freezing temperature in the northern districts on the 3d and 4th, doing further damage to the fruit crops. The rainfall was excessive in the exereme southeast, heavy in the south and southwest; moderate in the northwest and central; and light in the north and northeastern counties. The rains were very beneficial and oats and other small grain generally show an improvement; but there are numerous reports that some of the late sown oats have not yet germinated in the northwest and northern counties on account of the surface soil having been too dry and the grain not properly covered. Considerable corn was planted during the week, but the work was interrupted by rain in the southern and is held back in northern districts owing to the cold weather; farmers being afraid to risk planting under unfavorable conditions. Grass in pastures and meadows has made slow growth, but shows some improvement in condition in western and southern counties where the rainfall was the heaviest. For the state at large the conditions are promising and the week closes with indications of warmer and more favorable weather.

BULLETIN No. 6.—*May 15.* The past week was unseasonably cool, and except in the extreme southeastern county it was abnormally dry prior to the 15th. Frost occurred generally on the 12th, 13th and 14th with freezing temperature on the last date in northern districts. There was, however, more than the average amount of sunshine and rapid progress was made in corn planting. Fully 70 per cent of the corn has been planted with the ground generally in excellent physical condition, but owing to the cold weather the seed is germinating very slowly, and considerable replanting will be done especially in southern districts where the ground is damp from the heavy rains of the previous week. Small grain and grass, while making slow growth, are doing as well as could be expected under the unfavorable conditions and some improvement is reported. Early potatoes which were frozen in April are coming up again and are looking well. The prospects for fruit are very poor. The week closes with rain falling in all parts of the state.

BULLETIN No. 7.—*May 22.* Continued cool weather has prevailed during the last seven days, but the rainfall, for the state as a whole, has been much heavier than during any previous week of the season. The temperature was from one to five degrees below the normal and light frost was reported from several localities on the 18th. Copious rains fell in the central and northeastern districts where amounts from one to over three inches were reported. The rain has been very beneficial to grass, small grain, potatoes and garden truck and with warm weather would hasten the germination of corn. Practically all the corn acreage has been planted, but owing to poor seed and cold weather there will be much more replanting done than usual. The rains have also been beneficial to the berry crops and the indications are now favorable for one-fourth to one-half crop of strawberries. Many apple, cherry, plum trees and grape vines are again putting forth new blossoms.

BULLETIN No. 8.—*May 29.* The past week was unseasonably cold with little or no rain until Saturday when light to moderate showers occurred over the larger part of the state. The daily mean temperature was about 7 degrees below the normal, and light frost occurred in many localities on two or three mornings, but the damage was inconsiderable except that the low temperature prevents the germination and growth of corn. Replanting is general and some fields have been planted three times. Good seed corn is exhausted and the prospects for an average stand are very unfavorable. In addition to the damaging effects of the low temperature, cut and wire worms are becoming very active, especially on sod ground. All small grain, grass and potatoes have made considerable improvement during the last seven days, due to the copious rains of the previous week and those crops are generally in good condition except that grass in meadows and pastures is short for the season of the year and the hay crop will be much lighter than for the past two or three years. All fruit crops will be light.

BULLETIN No. 9.—*June 5.* Another cool and dry week has been added to the record of this erratic season. The mean temperature was about 9 degrees below the normal with a decided deficiency of rainfall and less than the usual amount of sunshine. While light showers occurred in nearly all sections of the state the amounts of rainfall were insufficient to be of much benefit except to retard the further drying of the surface soil. Replanting of corn is still in progress and the late planting is showing a better stand than was expected, but on account of poor seed, cold weather and the ravages of moles, cut and wire worms, there will not be over 65 per cent to 75 per cent of an average stand. The cold weather has also retarded the growth of corn and cultivation is only just beginning in the early planted fields. Small grain and especially oats has made satisfactory progres and are still in good condition. Rye is in bloom in southern, and early potatoes are in blossom in the northern districts. Grass in meadows and pastures is short, but otherwise in fairly good condition. The soil is in exceptionally fine tilth and with a good soaking rain and a few days of warm weather all crops would improve rapidly authough it is now too late to expect an average crop of hay, even with the most favorable weather. Tree fruits will be nearly a failure.

BULLETIN No. 10.—*June 12.* The average temperature of the past week was about 7 degrees below the normal with light frost in northern counties on the 7th, but yet it was the most favorable week, for crop growth, we have had this season. Copious showers occurred over the larger part of the state and the last three days were moderately warm. The rainfall was quite heavy and above the normal over about two-thirds of the state; the heaviest being in the Des Moines valley and especially in the northern half, where the weekly amounts ranged from 2.00 to over 3.00 inches. The rainfall was extremely light over the northeastern and extreme southwestern counties. Grass, small grain, and potatoes have improved under the effect of the recent rains and corn shows better color and is growing more rapidly since the advent of warm weather. Cultivation of early planted cornfields is general, but replanting still continues in all sections of the state. Winter grains are in bloom in central and are heading nicely in southern districts. Spring seeding is showing up well and gives promise of a good stand. Timothy is heading short and the hay crop will be light.

BULLETIN No. 11.—*June 19.* The weather during the past week was ideal for the growth and cultivation of corn. The temperature was about 5 degrees above the normal and while there was a total absence of rainfall over the larger part of the state, there was a decided excess of sunshine. Under these favorable conditions the entire week was devoted to work in the cornfields, which are now generally clean. The stand of corn has been improved by replanting and the crop as a whole, is improving rapidly. Rain is however needed, especially over the eastern and extreme western counties where the showers were light during the previous week. All small grains have made good progress and are heading nicely. Oats especially, are in exceptionally good condition and give promise of a large yield although the straw is short. Preparations are being made to begin the harvest of the light hay crop, at an early date. Potatoes are holding their own and the early ones are now ready for market.

BULLETIN No. 12.—*June 26.* Another week of ideal corn weather has caused a decided improvement in the condition of that crop. The plants have made an abnormally rapid growth; the fields were never cleaner at this time of the year and the soil is in the very best physical condition to withstand the effects of dry weather. Some of the early planted corn, in southern counties, is "knee high" and will be laid by during the coming week. The average temperature was about 8 degrees above the normal, and the maximum temperatures were above 90 degrees every day of the week. There was also an excessive amount of sunshine, but the rainfall was much below the normal. In fact the precipitation was practically nil over a large part of the state. There were, however, light and widely scattered showers over the central counties during the last three days which will be of great benefit in the localities where they occurred. All small grains are doing remarkably well but will soon need rain. Pasturage and early potatoes are showing the effect of the drouthy conditions more than any other crops. Clover hay harvest has begun and some timothy has been cut in southern counties and the reports indicate a fairly good yield of the former, but the latter crop will be light in all parts of the state.

BULLETIN No. 13.—*July 3.* Excessively high temperatures continued during the past seven days with nearly 100 per cent of sunshine and very little or no rain. Late reports, however, show that the showers, during the last two days of the previous week, were more general and the rainfall heavier than was indicated in the last bulletin. Corn has made rapid progress and is now up to the normal stage of growth for July 4th. Much of it has been laid by with the fields clean and the soil in good condition. Hay making is in progress and the crop, although lighter than for the past few years, is being secured in good condition. Small grain is holding its own against the drouthy conditions and with the exception of a few localities where showers have not occurred, is in very good condition and gives promise of good yields. Winter wheat harvest has begun in some of the southern counties and many fields of barley and early oats will be ready for the binder during the coming week. Pastures and early potatoes have been seriously injured by the dry weather and late potatoes would be improved by rain.

BULLETIN No. 14.—*July 14.* The weather during the past seven days has been ideal for haying, harvesting, and laying by the remainder of the corn crop; the general conditions being somewhat more favorable than during the previous week. The excessive temperature was not as great and showers were more general although the rainfall was very light over the larger part of the state, and practically nil over the eastern counties until Saturday evening. Copious to heavy and well distributed showers occurred over the northwestern and north central districts on the 6th and again on the 9th, and reports indicate much improvement in crop conditions in those sections. While the drouth has continued over the larger part of the state, corn and small grain have made considerable advancement. Small grain is filling and ripening nicely except in a few localities where the drouth has been of long duration. Corn has made rapid growth and shows little or no effect of dry weather. It has, however, reached that stage of development where it will require more moisture to keep up its normal growth than it has had in the past few weeks. Good progress has been made in haying and the conditions have been favorable for securing an excellent quality of hay, although the yield is below the average. The bulk of the winter wheat is in shock and many fields of barley and early oats have been cut, with prospects of fair to good yields and excellent quality of all small grain. Potatoes and pastures need rain badly.

BULLETIN No. 15.—*July 17.* Though the maximum temperatures on the 16th were up to or near the century mark, the mean temperature of the past week was about 2 degrees below the seasonable average. The rainfall was decidedly below the normal although heavy showers occurred in the northwestern, the extreme east central and southeastern counties, and light to moderate showers were reported from all other sections except the northeastern counties where the drouth has been the most severe. With the exception of the northeastern counties the rainfall has been sufficient to keep up the rapid growth of corn but not enough to interfere with the hay and small grain harvest nor for pastures and potatoes except in the localities where heavy showers occurred. Early corn is beginning to tassel and practically all of the late corn has been laid by with the fields clean and the soil in fine tilth. Haying and small grain harvest are progressing rapidly under ideal weather conditions and threshing has begun in southern districts. Winter wheat, early oats and barley are practically in shock and late oats and spring wheat are nearly ready to cut. The quality of hay is excellent, but the yield is light although meadows that were not pastured in the spring are producing more than was anticipated. No returns have been received from threshers, but fair to good yields of small grain are indicated generally. Pastures and potatoes need rain badly. Stock water is getting low in many localities.

BULLETIN No. 16.—*July 24*. The mean temperature for the past week was slightly below the normal, the days being bright and hot and the nights moderately cool. The rainfall was much below the average and badly distributed, a few localities reporting copious showers while the bulk of the state received little if any relief, and the drouth is unbroken. The heaviest rainfall, as in the past two weeks, was reported from the northwestern counties, but copious showers occurred in some localities in the northeastern district. Corn has held its own remarkably well and up to date has suffered little if any damage, but the crop has reached the danger line and will begin to retrograde if rain does not come soon. In some localities where showers have not ocurred recently, the plants wilt and the leaves curl during the day but still maintain a healthy color. The bulk of the hay and small grains have been cut and secured in excllent condition. Thrashing is becoming general and early reports indicate a full average yield. The quality of all grain is far superior to anything we have had for several years. Pasturage is so short that stock feeding is necessary in many localities. The potato crop continues to deteriorate except where heavy showers have occurred.

BULLETIN No. 17.—*July 31*. The average temperature for the past seven days was very near the normal, but the rainfall was decidedly below the average for the last week in July, although showers occurred on the 25th and 29th in all but the northeast part of the state. At many stations in the Des Moines, Iowa and Skunk Valleys the amount of rainfall exceeded one inch; the largest being 3.97 inches at Keosauqua. Corn on low ground and deep soil, and where the showers were heavy, still holds its own and has made satisfactory progress, but over the northeastern counties where there has been little or no rain and in many other localities where the soil is thin and the rainfall has been light, there are indications of firing. Three-fourths of the crop, however, is in excellent condition and can stand another week of dry weather, but the other fourth needs rain at once. Conditions have been favorable for haying, harvesting and thrashing. Preliminary reports from thrashers indicate that the quality of small grain is excellent and the yield will be considerably above the average of past years. Except where the rainfall has been the heaviest, pastures are practically bare and afford but little feed for cattle. Stock water is getting scarce in many localities. A heavy and general rain is needed badly in all parts of the state.

BULLETIN No. 18.—*August 7*. Light to heavy showers occurred over nearly all parts of the state on the night of August 2d, but in some localities the rainfall was not heavy enough to afford more than temporary relief from drouthy conditions. The showers were, however, timely and beneficial and in a few sections where rains have been frequent and heavy, the corn crop is now assured. On the other hand, the crop has deteriorated over the northeastern counties and in many localities of small area in the central districts where the showers have been few and the rainfall light. The bright sunshiny days and moderate temperatures have been favorable for thrashing and this work has progressed rapidly with very satisfactory results, both as to yield and quality of grain. The bulk of the shock thrashing is completed and early reports indicate that the average yield of oats will be about forty bushels per acre; wheat, twenty-five bushels; barley, thirty-two bushels, and timothy seed, four bushels. Pastures, meadows and potatoes are suffering for moisture and rain is needed for all growing crops and for fall plowing in southern counties.

BULLETIN No. 19.—*August 14.* The temperature was slightly and the rainfall decidedly below the normal, except over about twenty of the southwestern counties where heavy rains fell during Friday night and Saturday morning; the amounts of rainfall in that section ranged from one to nearly six inches. Light to moderate showers occurred over the central and northwestern counties, but little or no rain fell in the eastern districts. Owing to moderate temperature, light wind velocity, partly cloudy weather and scattered showers; corn has held its own remarkably well, and over two-thirds of the state is still in good condition, but rain would be beneficial in all sections. Over the northeastern, and in many localities in the central counties, the crop has been materially damaged by the drouth. There are many barren stalks and the ears that have started show poor development. The late corn is also shooting slowly. In some of the earliest planted fields, corn is now in the roasting-ear stage. Thrashing is progressing rapidly under favorable weather conditions, and reports continue to indicate very good yields and excellent quality of all small grains. There has been practically no growth of grass in pastures and meadows and fall plowing is being retarded on account of lack of moisture. Potatoes and garden truck are suffering for rain and stock water is getting low in many sections.

BULLETIN No. 20.—*August 21.* The past week was very favorable for corn and other growing crops. The mean temperature was about 3 degrees above normal, and there was an excess of rainfall over the larger part of the state. Copious and well distributed showers occurred on several days over all but the south central and southeastern counties, and the drouth is practically broken. The rains have been of great benefit to corn, especially in the late planted fields. Grass has revived and pastures and meadows are again looking green. The second crop of clover is growing rapidly and the indications are favorable for a good yield of seed. Two-thirds of the corn is in excellent condition, and, with normal weather until the end of September, will produce considerably more than an average crop. The remaining third of the crop has been injured, to some extent by the long continued drouth, but most of it will make decided improvement during the next week or ten days on account of the late rains. The rains came too late to be of benefit to most of the potatoes.

Fall plowing is progressing rapidly, with the soil in fine tilth, and the indications are favorable for an increased acreage of winter wheat. Thrashing and stacking was delayed somewhat during the first part of the week by showers.

BULLETIN No. 21.—*August 28.* The fore part of the week was excessively warm, but the latter half was cool and pleasant. A trace of frost was observed, on low ground, on the morning of the 26th in several localities in the central, western and northern districts, but no damage was reported. Last year the first light frost occurred on August 29th. The rainfall was light and considerably below the normal except over the east central counties where copious to heavy showers occurred on Wednesday night. A severe rain and hail storm passed over portions of Henry and northern Van Buren counties on the night of the 20th which did a great deal of damage to crops. Over the larger part of the state corn is holding its own and the early planted fields are making satisfactory progress towards maturity, but in other localities, comprising about one-third of the state, there has been some loss on account of lack of moisture. The crop as a whole is a week to ten days later than the average for the last week in August. Fall plowing is progressing rapidly in localities where rains have been heavy enough to soften the ground. Thrashing is nearing completion in many sections, and reports continue to show good yields and excellent quality of all small grains.

BULLETIN No. 22.—*September 4.* The past seven days were generally cloudy and damp, with the average temperature one to three degrees below the normal. Rain fell in some part of the state every day of the week, and as nearly all sections have received more or less moisture, there has been a decided improvement in crop and soil conditions. Pasturage and aftermath in meadows have made rapid growth and are now furnishing sufficient feed for stock, and thereby checking the rush of cattle to market. Fall plowing is progressing rapidly. Some of the late potatoes will be benefitted by the rains, but the crop as a whole will be far below the average. There has been enough moisture over the larger part of the state to mature the corn crop, but warm sunshiny weather is needed for the next four weeks to place the whole of the crop beyond danger of frost. Thrashing was delayed in the western counties where the rainfall was the heaviest. Reports continue to indicate more than the average yield of grain.

BULLETIN No. 23.—*September 11.* The fore part of the week was warm and generally cloudy, with showers over the larger part of the state, but Friday and Saturday were unseasonably cool. Light frost occurred on low ground, in all sections, on the morning of the 10th, but no damage was done to corn athough the temperature was below the freezing point in many places. Corn has made fair progress toward maturity and probably a third of the crop would not be seriously injured by a heavy frost. More than the normal amount of corn will be harvested for fodder and silage and seed corn will be selected earlier than usual. Plowing is progressing and the seeding of fall grain has begun in southern counties. Potatoes have improved since the late rains and pastures are generally in good condition. The latest thrashing returns give promise of a total yield of about 170,000,000 bushels of oats.

Bulletin No. 24.—*September 18.* Until Saturday the weather was cool and generally cloudy with frequent and fairly well distributed showers. The rainfall exceeded two inches over most of the central and south central counties, and in some localities the rain for the week was the heaviest since May. Corn has made good progress toward maturity notwithstanding the cool, cloudy weather, and from 65 to 70 per cent of the crop is safe from injury by an ordinary heavy frost. Much of it would, however, be damaged by severe freezing weather. Considerable seed corn has been picked and much more than the usual amount of corn is being cut for fodder and silage, to offset the shortage of the hay crop, especially in the northeast counties. Late potatoes continue to improve and while the crop will be much below the average in yield, the quality will be good. Fall plowing and seeding winter grains are progressing rapidly under favorable conditions. The acreage of winter wheat will be increased materially. The week closes with much higher temperature and the weather chart indicates good ripening weather for several days at least.

Bulletin No. 25.—*September 25.* The first three days of the week were clear and very warm, but the last four were cloudy and cool with generally heavy rain on the 22d and 23d. Corn made rapid progress toward maturity during the early part of the week and about 85 to 90 per cent. of the crop is now safe from an ordinary frost. Much of the remainder will require ten days to two weeks to be safe from damage from heavy frost, and would be seriously injured by freezing temperature within that time. Rapid progress was made during the early part of the week in cutting corn and filling silos. The late rains have put the ground in fine condition for fall plowing and that work. together with seeding fall grain, is progressing rapidly, with a large increase in the acreage of wheat. The early sown winter wheat is up and is growing nicely. Considerable hay was put up, especially on the Missouri river bottoms. Late potatoes continue to improve where the vines were not killed by the drouth, but the crop will be light. Pastures are in excellent condition for fall and winter feed.

Bulletin No. 26.—*October 2.* The week was very favorable for ripening corn and the crop is now practically safe from any damage by frost. There is, however, a small percentage of the crop in the late-planted fields that will need another week of good weather to fully mature. With the exception of the 26th and 27th the weather was ideal. Light rain fell on the 26th and light to heavy frost occurred on the 27th, but no material damage was done. A great deal of interest is being taken in the selection of seed corn and more seed was harvested in September than ever before. The rains of the previous week and the early part of the past week were very beneficial for fall plowing, pastures, meadows and winter grains. Most of the silos have been filled and much more than the usual amount of corn has been put in shock. Fall grains are up and growing nicely. In spite of the severe freezing weather in April and May and the drouth during the summer months, the harvest has been profitable, and with a few exceptions very bountiful. Tree fruits were practically killed and berries seriously injured by the late frosts of spring and the hay and potato crops were shortened by the drouth, but the small grains were above the average in quality and yield. Corn was damaged considerably by the lack of moisture, but the average yield will be above the normal and the total yield will probably be over 300,000,000 bushels. The shortage of the hay crop has been made up largely by the extra amount of corn cut for fodder and the excellent condition of fall pastures. The potato crop will be smaller than usual, but the quality will be fairly good.

IOWA CROP REPORT, JUNE 1, 1910.

Acreage of Farm Crops, Estimated Condition of Staple Crops, Fruits and Live Stock.

The crop season of 1910 opened much earlier than usual. March and the first half of April was warm, dry and abnormally pleasant, affording an unusual opportunity for field work and favorable conditions for the growth of vegetation. At the end of March nearly all of the wheat and about 50 per cent of the oats had been seeded and a large acreage of ground had been prepared for corn. By the middle of April all small grain had been sown and considerable corn had been planted. The latter half of April and all of May was exceptionally cold and generally dry so that by the end of May the season, so far as the growth of vegetation was concerned, was 10 days to 2 weeks behind the average.

CORN.—Owing to the fact that much of the meadows, pastures and fall grains were winter killed and to the favorable conditions for preparing the ground, the acreage of corn has been increased about 2 per cent. The stand is, however, from 25 to 30 per cent. below the average on account of poor seed, activity of cut and wire worms, and the continued cold weather which prevented germination, and the growth of the plants so that the condition on June 1st was 79 per cent. Last year at corresponding date the condition was rated at 94 per cent. The soil is in exceptionally fine physical condition and with favorable weather during June the condition of corn will improve rapidly.

WINTER WHEAT.—There has been a decrease of about 9 per cent. in the acreage of winter wheat owing to winter killing, so the estimated acreage on June 1st was 91 per cent and the condition 88 per cent. Last year the condition was 92 per cent.

SPRING WHEAT.—Acreage decreased 1 per cent, making present acreage 99 and the average condition, 96 per cent. Last year the condition on June 1st was 94 per cent.

OATS.—The acreage of oats is placed at 100 per cent and the condition at 94, as compared with a condition of 90 per cent last year.

Barley.—Acreage seeded, compared with last year, 93 per cent, and the average condition, 93 per cent. Last year the condition was 94 per cent.

Rye.—Acreage, 94; estimated condition, 90 per cent as compared with 94 per cent last year.

Flax.—Area seeded, 97 per cent; condition, 90 per cent.

Potatoes.—Acreage planted, 100 per cent; condition, 97 per cent. Last year condition 96 per cent.

Meadows.—There has been a reduction of about 3 per cent in the area of meadows, the acreage being 97 per cent. The condition 79 per cent. as compared with 97 per cent last year. Grass started early this spring but the condition has been reduced by drouth and much freezing weather during April and continued subnormal temperature during May.

Pastures are about 99 per cent in acreage and 81 per cent in condition as compared with a condition of 97 per cent. last year.

Pop Corn.—The acreage is 100, and the condition is 85 per cent.

Sweet Corn for Can.—Acreage 102; condition 82 per cent.

Condition of Fruit.—As compared with an average crop.—Apples, 12 per cent; plums, 7; peaches. 2; grapes, 31; cherries, 8; strawberries, 46; raspberries, 32; blackberries, 48 per cent.

Condition of Live Stock.—Cattle, 97 per cent; hogs, 97; horses, 99; sheep, 98; foals, 93; spring pigs, 91 per cent.

The acreage of crops cannot be tabulated until the returns of the township assessors are received from all the counties. The complete report of acreage will be published in July.

IOWA CROP REPORT, JULY 1, 1910.

Following is a summary of reports received from crop correspondents of the Iowa Weather and Crop Service, showing the estimated conditions of staple crops July 1, 1910, as compared with the average condition on that date in past years: Corn, 89 per cent; winter wheat, 87; spring wheat, 92; oats, 92; rye, 92; barley, 90; flax, 85; hay, 68; pastures, 70; potatoes. 86; popcorn, 92; sweet corn for can 89; apples 6; plums, 4; grapes, 30.

Condition July 1, 1909, corn, 92 per cent; winter wheat, 96; spring wheat, 95; oats, 91; rye, 96; barley, 94; flax, 94; hay 100; pastures, 103; potatoes, 100; apples, 76; plums, 68; grapes, 85.

July 1st average of the past ten years: corn 90 per cent; winter wheat, 94; spring wheat, 93; oats, 90; rye, 95; barley, 93; flax, 92; hay, 90; pastures, 8; potatoes, 98.

IOWA CROP REPORT, AUGUST 1, 1910.

Following is a summary of reports from crop correspondents of the Iowa Weather and Crop Service, showing the estimated condition of staple crops August 1, 1910, as compared with the average condition on that date in past years. There has been a decided improvement in the condition of corn during the past month, over the larger part of the state and especially over the northwestern., southeastern and many of the southern counties where showers have been timely and rainfall sufficient to keep the plants growing rapidly. On the other hand the condition has declined over the northeastern and some of the southwestern counties, due to a deficiency of moisture. The average condition of corn for the four quarters of the state are as follows: Northwest quarter, 97 per cent; northeast, 80 per cent; southeast, 96 per cent, and southwest, 89 per cent, which makes an average for the state of 90.5 per cent. The average condition for the western half of the state, which has 57 per cent of the corn acreage, is 93 per cent as compared with 88 per cent for the eastern half.

The average condition of spring wheat was 102 per cent; oats, 101; barley, 99; flax, 88; hay, 70; pastures, 59; potatoes, 63; apples, 4; grapes, 28; pop corn, 87; sweet corn for can, 85 per cent.

The condition on August 1 1909 was: Corn, 91 per cent; spring wheat, 92; oats, 92; barley, 87; flax, 93; hay, 101.5; pastures, 102; potatoes, 92; apples, 65; grapes, 80 per cent.

August 1st average of the past 10 years: Corn, 86.5 per cent; oats, 85; spring wheat, 87; barley, 88; flax, 88; hay, 93; pastures, 92; potatoes, 97; apples, 57; and grapes, 82 per cent.

IOWA CROP REPORT, AUGUST 25, 1910.

Following is a summary of the August 25th reports received from crop correspondents of the Iowa Weather and Crop Service. The average condition of the corn crop was estimated as 89 per cent, which is 1.5 per cent lower than on August 1st.

It was estimated that with normal weather, about one-third of the corn would be safe from frost by September 15th; 60 per cent on the 25th; 75 per cent on the 30th, and 95 per cent on October 10th.

The average condition of late potatoes was 53 per cent or 10 per cent less than on August 1st.

About two-thirds of the threshing has been completed and preliminary reports indicate average yields as follows: Winter wheat, 23 bushels per acre; spring wheat, 21; oats, 39; barley, 30; rye, 21. and timothy seed, 3.6 bushels. The average yield of grain is subject to change after the receipt of final and more complete reports at the end of the season.

FINAL REPORTS FOR THE STATE—TOTAL YIELD OF SOIL PRODUCTS—VALUE AT FARM PRICES, DECEMBER 1, 1910.

Following is a summary of reports from crop correspondents of the Iowa Weather and Crop Service and Threshermen, showing the average yield per acre and total yields of staple soil products, and the average prices at the farms or nearest stations, December 1, 1910. The value gained by feeding farm crops for production of live stock, poultry and dairy products, is not taken into consideration in this report.

CORN.—The estimated acreage of the corn crop is 8,940,300 acres and, notwithstanding the fact that the average precipitation for the state for the 9 months, January to September, inclusive, was only 18.41 inches, which is 8.72 inches below the normal and the least amount for a like period in the past 21 years except in 1894, when the total for the same months was 17.40 inches, the average yield is 39.7 bushels per acre, and the total output for the state appears to be 354,506,500 bushels. This is the largest yield with one exception ever credited to the state. In 1906 the total yield was 388.348,920 and the average yield was 41 bushels per acre. At the average farm price, 36 cents per bushel, this year's corn crop is valued at $127,622,340.00. Nearly all of the crop is now in cribs and the condition of the corn was never better.

OATS.—Average yield, 38.9 bushels per acre; total crop, 162,228,970 bushels; farm price, 27 cents; total volue, $45,421,822.00.

SPRING WHEAT.—Average yield per acre, 20.2 bushels; total yield, 5,920,100; farm value at 86 cents per bushel, $5,141,286.00.

WINTER WHEAT.—The average yield of winter wheat was 22.3 bushels per acre; total yield, 4.125,820 bushels; average farm price, 86 cents per bushel; value of crop, $3,548,205.00.

BARLEY.—Average per acre, 30.5 bushels; total yield, 16,294,850 bushels; farm price, 56 cents per bushel; total value, $9,125,116.00.

RYE.—Average yield 18.8 bushels per acre; total crop 738,840 bushels; farm price, 61 cents; total value, $450,692.00.

FLAX SEED.—Average per acre, 10.2 bushels; total product, 172,840 bushels; total value at $2.28 per bushel, $394,075.00.

POTATOES.—Average yield per acre, 79 bushels; total product, 10,776,000 bushels; average farm price, 48 cents; total value $6,250,080.00.

HAY.—Average per acre, 1.15 tons; total yield, 4,903,300; farm price on December 1, $9.75; total value, $47,807,175.00.

TABULATED CROP SUMMARY.

From estimates received by Iowa Weather and Crop Service.

Corn	354,506,500 Bu.	$ 127,622,340.00
Oats	168,228,970 Bu.	45,421,822.00
Spring wheat	5,920,100 Bu.	5,141,286.00
Winter wheat	4,125,820 Bu.	3,548,205.00
Barley	16,294,850 Bu.	9,125,116.00
Rye	738,840 Bu.	450,692.00
Flax	172,840 Bu.	394,075.00
Potatoes	10,776,000 Bu.	6,250,080.00
Hay	4,903,300 Tons	47,807,175.00
Pastures and grazing	Estimated	94,000,000.00
Timothy and clover seed	Estimated	1,000,000.00
Alfalfa and millet	Estimated	610,000.00
Sweet corn	Estimated	700,000.00
Pop corn	Estimated	400,000.00
Fruit crops	Estimated	3,000,000.00
Garden truck	Estimated	5,000,000.00
Miscellaneous crops	Estimated	12,000,000.00
Total value		$ 362,470,791.00

IOWA CROPS, 1910—NUMBER OF ACRES BY COUNTIES

Counties	Corn Acres	Oats Acres	Spring Wheat Acres	Winter Wheat Acres	Barley Acres	Rye Acres	Flax Acres	Pota-toes Acres	Hay Acres	Pastures Acres	Alfalfa Acres	Pop Corn Acres	Sweet Corn for Cans Acres
Adair	107,900	27,340	3,350	95	5,810	30	--------	1,020	50,400	114,350	30	45	--------
Adams	68,000	20,860	1,240	2,250	2,070	90	--------	550	30,450	90,820	75	--------	--------
Allamakee	47,400	33,950	900	250	15,000	400	45	1,620	49,260	139,980	30	--------	60
Appanoose	48,500	12,680	360	2,660	35	310	--------	400	46,820	90,950	--------	5	--------
Audubon	93,000	32,070	5,250	115	8,970	35	--------	890	32,480	81,070	45	--------	--------
Benton	125,000	68,420	990	90	15,380	1,010	--------	1,600	56,400	115,600	20	--------	2,490
Black Hawk	89,600	51,920	130	60	5,780	2,360	70	2,280	49,000	100,200	--------	110	1,500
Boone	112,700	54,920	1,610	130	1,310	250	--------	1,230	49,550	77,540	55	10	--------
Bremer	60,000	53,500	120	180	4,500	560	10	1,380	46,300	68,000	--------	130	1,140
Buchanan	85,300	50,600	270	110	4,060	870	12	1,200	55,500	102,390	--------	2	800
Buena Vista	98,500	74,300	400	60	1,870	10	90	1,520	43,700	73,200	70	120	140
Butler	97,500	70,920	220	60	2,720	1,750	50	1,900	43,000	80,400	--------	270	30
Calhoun	114,000	81,000	230	110	2,000	20	100	1,100	35,100	67,200	25	10	310
Carroll	106,000	55,000	6,000	170	6,500	60	15	2,000	39,700	72,700	40	--------	--------
Cass	111,400	33,570	10,710	3,050	5,720	180	50	1,290	42,220	100,800	65	180	460
Cedar	102,500	31,500	1,300	1,500	15,700	620	--------	1,350	47,800	98,400	--------	--------	290
Cerro Gordo	91,500	70,500	400	220	3,000	150	240	1,370	59,000	77,200	--------	--------	--------
Cherokee	110,000	69,000	930	40	6,700	10	20	1,740	41,800	81,300	90	--------	--------
Chickasaw	65,300	56,800	860	30	6,200	300	800	1,230	42,600	76,100	--------	--------	--------
Clarke	52,300	14,860	80	2,470	980	40	--------	290	40,400	95,760	--------	--------	--------
Clay	79,000	72,000	460	90	1,740	100	160	830	50,000	83,500	20	100	--------
Clayton	108,000	52,380	1,070	660	15,750	990	--------	1,750	61,300	153,100	20	--------	250
Clinton	114,000	38,810	1,440	1,130	9,390	1,150	--------	1,220	63,000	152,600	--------	--------	--------
Crawford	143,000	51,540	17,220	510	10,400	140	--------	2,300	53,500	123,300	240	110	--------
Dallas	115,500	47,440	1,570	1,490	1,450	260	--------	770	31,220	95,600	150	10	40
Davis	55,800	16,600	40	3,000	40	710	--------	720	43,800	189,800	20	--------	--------
Decatur	63,500	19,000	90	2,800	30	260	--------	300	39,200	113,820	--------	80	--------
Delaware	79,800	38,400	210	50	13,900	1,300	--------	1,140	52,100	106,400	--------	--------	170
Des Moines	63,000	21,040	270	7,640	800	645	--------	1,200	25,490	87,020	15	20	35
Dickinson	44,000	30,900	870	80	3,100	160	610	570	33,000	50,000	10	40	15
Dubuque	65,500	46,250	660	190	6,300	220	--------	1,970	58,610	141,500	--------	--------	150
Emmet	45,000	35,400	450	--------	2,430	10	420	760	36,530	49,000	--------	--------	--------
Fayette	86,500	56,500	700	180	13,100	450	270	1,600	69,000	144,500	30	110	540
Floyd	75,000	66,900	400	55	2,500	640	1,880	2,160	37,450	64,440	--------	50	15
Franklin	95,500	82,700	610	110	4,300	260	70	2,100	48,700	81,100	20	--------	--------

Fremont	127,000	12,400	3,600	5,800	240	220	----------	720	22,000	74,200	1,910	50	70
Greene	118,000	54,200	400	110	2,400	30	100	1,000	41,300	87,000	30	--------	--------
Grundy	96,400	65,310	220	110	7,430	25	----------	7,380	35,620	71,700	--------	--------	35
Guthrie	81,000	32,480	2,440	200	2,660	60	----------	810	35,600	115,340	--------	23	--------
Hamilton	109,800	69,130	1,110	660	670	45	85	1,020	47,400	88,700	30	15	25
Hancock	75,300	63,120	1,340	40	4,290	150	160	1,030	44,780	62,970	10	--------	85
Hardin	99,000	61,440	1,370	480	2,250	70	----------	2,650	41,600	89,900	20	20	--------
Harrison	138,500	22,500	17,000	5,800	3,130	220	----------	1,440	26,000	82,540	5,000	--------	--------
Henry	72,200	29,260	240	3,200	340	680	----------	570	28,000	85,300	20	20	600
Howard	45,500	46,000	530	50	9,370	40	2,900	920	43,740	64,000	--------	--------	--------
Humboldt	73,500	53,800	1,780	25	540	10	90	700	35,800	55,100	20	5	--------
Ida	88,800	41,630	2,340	210	13,450	----------	20	1,010	31,220	57,700	70	1,300	--------
Iowa	91,200	39,050	2,710	365	2,030	400	----------	1,390	44,150	115,000	6	8	190
Jackson	62,000	25,520	1,120	400	6,640	620	----------	1,150	63,050	115,470	10	10	180
Jasper	132,100	47,600	7,900	1,350	2,250	360	----------	1,620	53,500	142,600	--------	--------	20
Jefferson	63,200	23,840	820	4,000	760	680	----------	490	31,500	103,100	15	--------	--------
Johnson	77,000	33,660	1,460	1,080	3,800	1,270	----------	1,180	37,200	101,460	--------	--------	--------
Jones	80,000	26,000	320	90	10,000	600	----------	780	52,100	121,200	--------	--------	200
Keokuk	97,000	31,100	3,750	1,800	2,770	820	----------	650	42,600	109,000	20	80	--------
Kossuth	123.000	130,000	2,500	50	3,000	50	1,400	1,700	98,000	120.000	10	10	--------
Lee	55,600	18,300	----------	15,700	170	2.800	----------	1.280	36.000	102,000	30	10	20
Linn	101,000	50,680	1,580	140	4,420	1,140	----------	2,100	55,850	119,900	15	20	700
Louisa	67.900	19.400	1.500	10.200	570	1,800	----------	480	18,300	63,400	30	--------	440
Lucas	52,600	15,600	470	2,950	35	265	----------	380	36,500	105.400	6	2	--------
Lyon	101,000	66,700	1,160	80	24 900	20	160	1,890	33.230	58,300	50	--------	--------
Madison	85,000	18,600	1,700	950	5,100	110	----------	700	41,000	126,000	20	--------	25
Mahaska	101.000	31.600	3.700	1,600	2,500	380	40	780	38,000	193,600	20	10	15
Marion	86,000	22,600	6,000	2,330	3,800	370	----------	570	35,500	126.500	80	--------	140
Marshall	110,400	59,040	2,100	1,440	1.670	220	19	2,400	40.000	89,600	15	16	105
Mills	91,600	12,440	5,910	2,860	960	65	----------	800	22,400	66,250	2,530	7	10
Mitchell	72,600	74,600	680	45	7,320	75	1,800	1,520	31,270	62,900	--------	--------	40
Monona	125,500	23,200	11,330	16,000	4,500	120	----------	1,380	31,000	90,260	3,350	80	--------
Monroe	36,000	6,580	2,250	2,620	170	80	----------	260	36,160	109,840	--------	--------	--------
Montgomery	93,000	15,280	12,310	8,700	1,280	65	----------	700	27,600	71,200	400	20	--------
Muscatine	65,200	15,800	1,550	4,100	8,700	3,200	----------	3,130	28,000	80,860	30	20	--------
O'Brien	94,600	64,740	440	110	14,760	70	40	1,580	41,970	69,200	8	30	7
Osceola	55,000	52,000	170	25	7,800	20	260	900	25,900	40,800	--------	20	--------
Page	118,000	17,700	7,100	7,500	1,600	230	----------	700	35,500	93,500	130	30	100
Palo Alto	71,200	53,400	350	60	1,130	----------	420	1,020	61,200	81,200	6	300	--------
Plymouth	174,800	67,900	21,430	1,230	13,790	30	30	2,030	47,000	80.450	600	20	48
Pocahontas	99,500	81,650	410	50	560	70	430	3,250	45,550	70,100	20	1,300	5
Polk	106,500	34,200	6,200	2,600	1,450	200	----------	2,850	34,000	74,800	100	250	700
Pottawattamie	195,000	38,100	22,850	3,730	6,450	200	----------	2,800	50,600	119,700	3,800	10	200
Poweshiek	99,100	39,000	2,600	300	5,450	140	----------	970	41,730	105,000	10	--------	--------
Ringgold	61,500	23,700	130	2,700	80	100	----------	200	46,000	114,000	15	--------	--------
Sac	113,400	63,500	600	250.	3,700	----------	20	1,120	43,840	81,000	170	3,230	750
Scott	76,000	21,560	2,270	4,570	23,870	1,500	----------	8,500	37,000	75,420	30	20	20
Shelby	130,000	36,100	10,500	500	14,000	90	----------	1,300	44,000	81,800	125	--------	75

IOWA CROPS, 1910—NUMBER OF ACRES BY COUNTIES—CONTINUED

Counties	Corn Acres	Oats Acres	Spring Wheat Acres	Winter Wheat Acres	Barley Acres	Rye Acres	Flax Acres	Potatoes Acres	Hay Acres	Pastures Acres	Alfalfa Acres	Pop Corn Acres	Sweet Corn for Cans Acres
Sioux	156,000	84,600	12,320	580	32,000	20	35	1,750	50,400	87,200	320	5	
Story	119,300	55,500	1,020	1,230	1,300	180	15	970	42,100	79,700	30	15	
Tama	128,000	65,500	3,700	190	10,500	370		3,200	55,000	123,000			330
Taylor	74,900	20,200	395	4,680	1,110	130		490	39,900	118,800	45		
Union	57,500	18,800	510	620	1,190	80		800	35,600	92,600	30		30
Van Buren	57,700	18,080	80	6,250	150	720		310	35,000	126,300	120	50	12
Wapello	50,200	15,000	400	3,700	550	500		850	31,000	86,000	10	10	
Warren	76,500	17,230	3,360	3,350	1,240	300		850	41,800	106,500	20		
Washington	99,000	41,360	1,750	2,400	1,260	420		720	39,000	109,330	10		
Wayne	76,100	27,000	55	1,650	250	100		220	58,000	117,000	10		6
Webster	113,700	85,890	2,880	170	780	70	125	1,310	55,410	94,200	10	6	
Winnebago	46,500	33,250	6,880		6,090		580	870	41,450	51,850			520
Winneshiek	72,900	62,000	5,170	130	18,800	180	1,760	1,310	59,680	134,430		25	
Woodbury	157,000	53,840	8,680	9,450	12,390	40	40	1,890	46,470	95,200	1,770	60	75
Worth	46,500	49,400	3,700	35	5,000	35	1,300	710	40,300	52,570			
Wright	99,500	74,200	1,250	80	2,760		110	1,260	46,500	73,300			
Total for State	8,940,300	4,325,430	293,950	185,370	533,700	39,295	16,941	136,660	4,242,610	9,312,940	22,206	8,509	14,213

Statistics by counties showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly, will be found in part 3, page 86, of this year book.

FINAL CROP REPORT—1910.

AVERAGE YIELD PER ACRE AND TOTAL PRODUCT—BY COUNTIES.

Counties	Corn		Oats		Spring Wheat		Winter Wheat		Barley		Rye		Flax Seed		Potatoes		Hay	
	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Tons per acre	Total Tons
Adair	43	4,639,700	39	1,066,300	21	70,400	30	2,900	32	185,900	18	500	----	----------	58	49,200	1.3	65,500
Adams	44	2,992,000	40	834,400	19	23,500	24	51,000	33	68,300	26	2,300	----	----------	55	30,300	1.1	33,500
Allamakee	32	1,516,800	36	1,222,200	26	23,400	20	5,000	28	420,000	18	7,200	14.0	630	89	144,200	0.8	39,400
Appanoose	39	1,891,500	37	469,100	17	6,100	23	61,100	30	1,050	15	4,600	----	----------	60	24,000	1.3	60,800
Audubon	40	3,720,000	37	1,186,590	22	115,500	23	2,600	28	251,100	16	600	----	----------	128	113,900	0.8	26,000
Benton	40	5,000,000	39	2,668,400	20	19,800	20	1,800	28	430,600	20	20,200	----	----------	110	176,000	1.2	67,700
Black Hawk	41	3,673,600	34	1,765,300	22	2,900	23	1,400	35	202,300	25	69,000	11.7	840	80	182,400	1.4	68,600
Boone	41	4,620,700	37	2,022,000	17	27,400	20	2,600	33	43,200	20	5,000	----	----------	58	71,300	1.1	54,500
Bremer	34	2,040,000	35	1,872,500	21	2,500	23	4,100	31	139,500	16	8,900	12.0	120	56	77,300	1.0	46,300
Buchanan	38	3,241,400	45	2,277,000	22	5,900	26	2,900	28	113,700	18	15,600	12.0	140	72	86,400	1.3	72,100
Buena Vista	42	4,137,000	43	3,194,900	18	7,200	21	1,300	35	65,400	20	200	13.0	1,170	111	168,700	1.1	48,100
Butler	36	3,510,000	32	2,269,400	19	4,200	19	1,100	30	81,600	17	29,800	12.5	630	112	212,800	1.0	48,000
Calhoun	42	4,788,000	43	3,483,000	23	5,300	26	2,800	35	70,000	20	400	13.0	1,300	75	82,500	1.0	35,000
Carroll	41	4,346,000	46	2,530,000	20	120,000	25	4,200	33	214,500	16	1,000	11.0	160	118	236,000	1.3	51,600
Cass	38	4,456,000	33	1,208,500	17	184,100	22	67,100	25	143,000	17	4,000	12.5	620	100	129,000	1.2	50,700
Cedar	49	4,100,000	42	1,323,000	22	28,600	28	42,000	30	471,000	22	13,600	----	----------	119	160,600	1.1	63,900
Cerro Gordo	35	3,292,500	33	2,326,500	18	7,200	14	3,100	26	78,000	15	2,300	8.2	1,200	71	97,300	1.2	70,800
Cherokee	42	4,620,000	47	3,243,000	21	19,500	25	1,000	36	241,200	17	170	10.0	200	104	181,000	1.1	46,000
Chickasaw	28	1,828,400	37	2,101,600	23	19,800	21	700	30	186,000	18	5,400	10.5	9,310	59	61,500	1.3	55,400
Clarke	32	1,674,600	31	460,700	15	1,200	15	35,000	26	25,500	15	600	----	----------	35	10,100	0.8	32,300
Clay	46	3,634,000	43	3,096,000	21	9,700	27	2,100	33	57,400	20	2,000	10.0	1,000	93	77,200	1.2	60,000
Clayton	40	4,320,000	40	2,095,200	24	25,700	20	13,200	31	535,500	21	20,800	----	----------	50	87,500	1.4	85,800
Clinton	36	4,104,000	43	1,668,800	23	33,100	29	32,800	21	291,100	23	26,400	----	----------	59	72,000	1.2	75,600
Crawford	41	5,863,000	43	2,345,200	19	327,200	25	12,800	30	312,000	13	2,500	----	----------	95	218,500	1.3	69,500
Dallas	39	4,501,500	40	1,897,600	21	33,000	25	37,200	34	40,300	30	7,800	----	----------	47	36,200	1.1	34,300
Davis	43	2,390,400	34	564,400	25	1,000	19	57,000	30	1,200	16	11,400	----	----------	64	46,100	1.2	52,600
Decatur	38	2,413,000	28	537,000	18	1,600	19	53,200	30	900	18	3,900	----	----------	69	18,000	1.1	43,100
Delaware	32	2,553,600	29	1,113,600	28	5,900	26	1,300	28	389,200	20	26,000	----	----------	40	45,600	1.1	57,300
Des Moines	45	2,835,000	33	793,320	20	5,400	20	152,800	31	21,800	16	10,300	----	----------	71	85,200	1.2	30,600

FINAL CROP REPORT—1910—CONTINUED

Counties	Corn		Oats		Spring Wheat		Winter Wheat		Barley		Rye		Flax Seed		Potatoes		Hay	
	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Total per acre	Total Tons
Dickinson	39	1,716,000	36	1,112,400	23	20,000	23	1,800	35	108,500	22	3,500	10.0	6,100	84	47,900	1.2	39,600
Dubuque	32	2,096,000	36	1,665,000	22	14,500	26	4,900	30	189,000	20	4,400	----	----------	58	114,300	1.0	58,700
Emmet	36	1,620,000	44	1,557,600	21	9,400	----	----------	32	77,800	20	200	11.0	4,620	55	41,800	1.0	36,500
Fayette	31	2,681,500	36	2,034,000	23	16,100	23	4,100	34	445,400	20	9,000	10.0	2,700	64	102,400	1.0	69,000
Floyd	29	2,175,000	28	1,873,200	21	8,400	22	1,200	28	71,100	16	10,200	10.0	18,800	90	194,400	1.1	41,200
Franklin	44	4,202,000	39	3,225,300	21	16,800	24	3,400	26	111,800	19	4,900	7.5	535	85	178,500	1.0	48,700
Fremont	44	5,588,000	38	471,200	19	68,400	32	185,600	25	7,000	18	4,000	----	----------	75	51,900	1.2	26,400
Greene	41	4,838,000	38	2,059,600	18	7,200	19	2,100	29	69,600	22	700	11.5	1,150	59	59,000	1.0	41,300
Grundy	43	4,145,200	39	2,547,100	24	5,300	26	2,900	34	252,600	15	400	----	----------	88	649,400	1.2	42,700
Guthrie	33	2,673,000	35	1,136,800	19	46,400	22	4,400	27	71,800	17	1,000	----	----------	98	79,400	1.1	39,200
Hamilton	44	4,831,200	39	2,596,100	22	21,400	25	16,500	26	17,400	25	1,100	12.5	1,060	51	52,000	1.4	66,400
Hancock	35	2,635,500	38	2,398,500	22	29,500	23	900	32	137,300	26	3,900	9.4	1,500	59	60,800	1.1	49,200
Hardin	42	4,158,000	41	2,519,000	21	28,800	22	10,600	30	67,500	21	1,500	----	----------	78	206,700	1.2	49,900
Harrison	36	4,986,000	36	810,000	18	306,000	24	139,200	29	90,800	20	4,400	----	----------	65	93,600	1.0	26,000
Henry	45	324,900	35	1,024,100	18	4,300	22	70,400	31	10,500	18	12,200	----	----------	76	43,300	1.5	42,000
Howard	29	1,319,500	27	1,242,000	20	10,600	24	1,200	23	215,500	19	800	7.6	22,000	68	63,500	1.3	56,900
Humboldt	43	3,160,500	40	2,152,000	23	41,000	26	650	34	18,400	20	200	15.0	1,350	81	56,700	1.1	39,400
Ida	44	3,907,200	46	1,915,000	21	49,100	26	5,500	34	457,300	----	----------	13.0	260	95	96,000	1.3	40,600
Iowa	42	3,830,400	39	1,522,900	24	65,000	30	10,900	28	56,800	20	8,000	----	----------	69	95,900	1.2	53,000
Jackson	34	2,108,000	36	918,700	22	24,600	22	8,800	26	172,600	24	14,900	----	----------	115	132,200	0.9	56,700
Jasper	47	6,208,700	45	2,142,000	23	181,700	23	31,000	34	76,500	20	7,200	----	----------	45	72,900	1.3	69,500
Jefferson	16	2,907,200	36	858,200	21	17,200	21	84,000	33	25,100	18	12,200	----	----------	76	37,200	1.2	66,000
Johnson	39	3,003,000	40	1,346,400	23	33,600	26	28,100	31	117,800	15	19,000	----	----------	90	106,200	1.3	48,400
Jones	36	2,880,000	44	1,144,000	25	8,000	26	2,300	31	310,000	17	10,200	----	----------	75	58,500	1.3	68,500
Keokuk	42	4,074,000	40	1,364,000	22	82,500	24	43,200	30	83,100	22	18,000	----	----------	110	71,500	1.1	46,900
Kossuth	43	5,289,000	42	5,460,000	22	55,000	24	1,200	35	105,000	16	800	11.5	16,100	50	85,000	1.0	98,000
Lee	41	2,279,600	32	585,600	----	----------	15	235,500	30	5,100	14	39,200	----	----------	82	79,400	1.4	50,400
Linn	35	3,535,000	38	1,925,840	24	37,900	26	3,600	32	141,400	19	21,700	----	----------	50	105,000	0.9	50,300
Louisa	44	3,987,600	35	679,000	20	30,000	21	214,200	30	17,100	16	28,800	----	----------	86	41,300	1.3	23,800
Lucas	32	1,683,200	35	546,000	17	8,000	17	50,100	31	1,100	15	4,000	----	----------	50	19,000	0.9	32,800
Lyon	42	4,242,000	45	3,001,500	25	29,000	26	2,100	36	896,400	18	360	11.0	1,760	50	94,500	1.0	33,200
Madison	40	3,400,000	39	725,400	20	34,000	25	23,700	31	158,100	25	2,800	----	----------	96	67,200	1.0	41,000
Mahaska	43	4,343,000	40	1,264,000	22	81,400	23	36,800	36	90,000	18	6,800	10.0	400	63	49,100	1.3	49,400
Marion	37	3,182,000	37	836,200	22	132,000	25	58,200	36	136,800	23	8,500	----	----------	71	40,500	1.2	42,600

Marshall	48	5,209,200	40	2,361,600	23	48,300	27	38,900	32	53,400	25	5,500	12.0	230	88	211,200	1.3	52,000
Mills	37	3,389,200	38	472,720	19	112,300	23	65,800	34	32,600	19	1,200			59	47,200	1.2	26,900
Mitchell	30	2,178,000	36	2,685,600	25	17,000	20	900	30	219,000	16	1,200	9.5	17,100	105	158,600	0.9	28,100
Monona	40	5,020,000	41	951,200	19	215,300	26	416,000	31	139,500	20	2,400			70	96,600	1.1	34,100
Monroe	36	1,296,000	33	217,100	18	40,500	20	52,400	35	6,000	20	1,600			53	13,800	0.8	28,900
Montgomery	39	3,627,000	38	579,600	18	222,100	24	208,800	34	43,500	17	1,100			68	47,600	1.0	27,600
Muscatine	46	2,999,200	36	568,800	22	34,100	23	94,300	27	234,900	17	51,400			83	259,800	1.0	28,000
O'Brien	45	4,257,000	47	3,012,800	22	9,700	22	2,400	40	590,400	19	1,300	11.0	410	98	154,800	1.5	63,000
Osceola	40	2,200,000	44	2,288,000	21	3,600	23	570	34	265,200	20	400	12.0	3,100	111	99,900	1.2	31,100
Page	35	4,130,000	38	672,600	18	127,800	22	165,000	30	48,000	19	4,400			45	31,500	1.3	46,100
Palo Alto	37	2,634,400	40	2,135,000	20	7,000	20	1,200	34	38,400			9.3	3,900	86	87,700	1.0	61,200
Plymouth	43	7,516,400	40	2,716,000	20	428,600	25	30,800	36	496,400	20	600	13.0	390	93	188,800	1.0	47,000
Pocahontas	41	4,079,500	43	3,639,900	24	10,600	26	1,300	32	17,900	18	1,300	11.5	4,950	56	182,000	1.1	50,100
Polk	42	4,473,000	41	1,402,200	21	130,200	22	57,200	32	46,400	23	4,600			46	131,100	1.3	44,200
Pottawattamie	36	7,020,000	35	1,333,500	18	411,300	23	85,800	25	161,300	17	3,400			62	183,600	1.0	50,600
Poweshiek	45	4,459,500	47	1,833,000	20	52,000	28	8,400	32	171,400	21	2,900			100	97,000	1.2	50,100
Ringgold	38	2,337,000	30	711,000	16	2,100	17	45,900	30	2,400	17	1,700			76	20,600	1.1	50,600
Sac	43	4,876,200	48	3,048,000	22	15,200	22	5,500	38	140,600			11.7	235	125	140,000	1.1	48,200
Scott	43	3,268,000	42	905,500	17	38,600	22	100,500	26	620,600	20	31,800			103	875,500	1.0	37,000
Shelby	36	4,680,000	31	1,119,100	18	189,000	22	5,000	30	420,000	20	1,800			58	75,400	0.8	35,200
Sioux	45	7,020,000	35	2,961,000	23	283,400	30	17,400	25	800,000	18	360	12.0	420	88	154,000	0.9	45,400
Story	47	5,607,100	43	2,386,500	20	20,400	25	30,800	24	31,200	24	4,300	13.5	200	115	111,500	1.4	58,900
Tama	45	5,700,000	41	2,685,500	22	81,400	22	4,200	32	336,000	15	5,500			79	252,800	1.2	66,000
Taylor	37	2,771,300	35	707,000	20	7,900	18	84,200	27	30,000	17	2,200			62	30,400	1.0	39,900
Union	42	2,415,000	31	582,800	18	9,200	16	9,900	30	35,700	15	1,200			60	48,000	1.3	46,300
Van Buren	44	2,538,800	28	506,200	18	1,400	18	112,500	22	3,300	14	10,000			60	18,600	1.4	49,000
Wapello	42	2,108,400	37	555,000	20	8,000	22	81,400	30	16,500	19	9,500			65	55,200	1.4	43,400
Warren	33	2,524,500	39	672,000	22	73,900	25	83,700	34	42,200	25	750			108	91,800	1.1	46,000
Washington	44	4,356,000	37	1,530,300	21	36,800	22	52,800	25	31,500	20	8,400			64	46,100	1.5	58,500
Wayne	34	2,587,400	33	891,000	18	1,000	18	29,700	30	7,500	18	1,800			73	16,100	1.1	63,800
Webster	47	5,313,900	44	3,779,200	23	66,200	24	4,100	31	21,200	16	1,100	13.5	1,690	96	125,800	1.4	77,600
Winnebago	38	1,767,000	39	1,296,700	20	137,600			30	182,700			11.5	6,670	59	51,300	1.2	49,700
Winneshiek	34	2,478,600	35	2,170,000	26	131,400	24	3,100	25	470,000	18	3,200	12.0	21,120	68	89,100	1.2	71,600
Woodbury	40	6,280,000	40	2,153,600	19	164,900	29	274,000	32	396,500	17	700	12.2	490	65	122,800	1.1	51,100
Worth	30	1,395,000	28	1,383,200	23	85,100	23	800	29	145,000	18	600	11.0	14,300	97	68,900	1.2	48,400
Wright	42	4,179,000	43	3,190,600	24	30,000	26	2,100	31	85,600	18	300	12.0	1,320	58	73,100	1.3	60,500
Total for state		354,506,500		168,228,970		5,920,100		4,125,820		16,294,850		738,810		172,840		10,776,000		4,903,300
Average per acre	39.7		38.1		20.2		22.3		30.5		18.8		10.2		79		1.15	

Statistics by counties showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly, will be found in part 3, page 86, of this year book.

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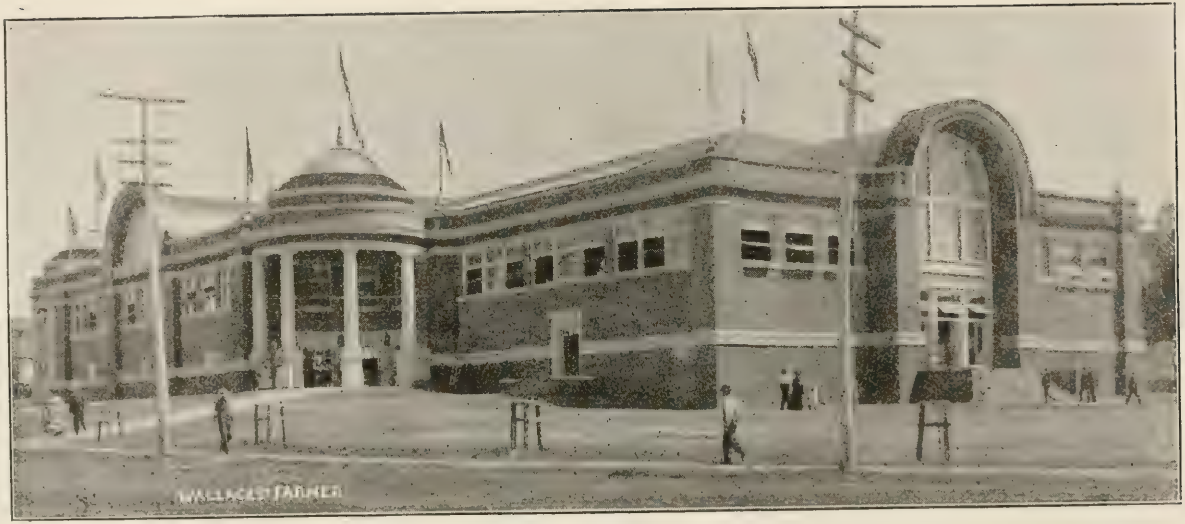

WALLACES' FARMER

Agricultural Building—Iowa State Fair and Exposition Grounds

PART II

STATISTICAL TABLES

OF

IOWA'S PRINCIPAL FARM CROPS

CORN CROPS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	41	230,633,200	$.25	$57,658,300	5,625,200
1885	33	224,636,522	.23	51,666,400	6,803,834
1890	28	239,675,156	.41	98,266,814	8,559,827

CORN CROPS—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	39	312,692,210	$.14	$ 43,916,900	8,043,390
1897	29	239,452,150	.17	40,706,860	8,253,522
1898	34.5	289,214,850	.23	66,519,400	8,396,286
1899	36.3	306,852,710	.23	70,429,410	8,460,521
1900	40.3	345,055,040	.27	93,164,860	8,618,630
1901	26.2	227,908,850	.50	113,954,000	8,687,480
1902	34	296,950,230	.28	83,432,700	8,700,000
1903	31	230,511,310	.36	82,984,071	7,398,320
1904	36	323,853,330	.35	113,348,665	9,000,000
1905	37.2	345,871,840	.35	121,055,144	9,285,150
1906	41	388,836,252	.33	128,155,143	9,443,960
1907	29.6	246,898,460	.44	108,635,322	8,858,000
1908	35.9	301,873,150	.51	153,955,306	8,399,610
1909	34.6	308,036,868	.51	157,098,802	8,681,850
1910	39.8	334,374,428	.36	120,374,794	8,399,712
Average 15 years	35	299,892,112	$ .34	$ 99,848,752	8,575,097

OATS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	35	42,288,800	$.23	$ 9,496,424	1,179,680
1885	32.5	71,737,900	.21	15,064,959	2,207,320
1890	29	80,002,735	.38	30,401,039	2,758,715

OATS—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	26	73,450,000	$.12	$ 8,814,000	2,825,000
1897	30	132,517,150	.16	21,211,380	4,405,782
1898	32	139,915,340	.21	29,383,220	4,299,243
1899	34.5	140,647,300	.19	26,722,980	4,069,557
1900	35	138,832,300	.20	27,766,460	3,991,690
*1901	32	114,883,000	.35	40,209,230	3,799,220
1902	31	92,907,900	.24	22,297,000	3,770,624
†1903	25.9	99,012,660	.30	29,703,798	3,822,822
1904	29.4	118,435,570	.26	30,793,284	4,018,980
1905	33.8	146,439,240	.25	36,609,810	4,177,545
1906	34	142,036,530	.27	38,349,878	4,166,800
1907	24.5	111,190,400	.39	43,364,256	4,536,170
1908	25.5	112,830,490	.43	48,517,110	4,431,650
1909	27	117,083,850	.35	40,979,348	4,312,134
1910	36	169,207,098	.27	45,685,916	4,697,749
Average 15 years	30.4	123,292,589	$.27	$32,693,845	4,088,331

*Short corn crop.
†Excessive moisture.

WHEAT—1880, 1885, 1900.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre spring wheat	Average yield per acre winter wheat	Total yield spring wheat	Total yield winter wheat	Total yield all wheat	Average farm price Dec. 1st	Total farm value Dec. 1st	Acreage
1880	10.5	------	------------	------------	36,099,760	$.82	$29,501,803	3,437,948
1885	12	------	------------	------------	31,776,108	.61	19,383,426	2,648,009
1890	11.7	------	------------	------------	25,114,552	.78	19,589,350	2,092,896

WHEAT—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre spring wheat	Average yield per acre winter wheat	Total yield spring wheat	Total yield winter wheat	Total yield all wheat	Average farm price Dec. 1st	Total farm value Dec. 1st	Acreage
1896	13	17	7,047,235	3,351,550	10,398,785	$.57	$ 6,020,000	739,245
1897	13.4	13	12,941,600	1,671,454	14,613,054	.74	10,813,650	1,222,974
1898	14.8	16.5	19,152,352	3,168,916	22,321,268	.53	11,602,000	1,484,682
1899	12.7	11	19,574,792	226,040	19,900,830	.58	10,701,490	1,559,931
1900	14.3	13.3	20,280,280	1,018,070	21,298,350	.60	12,799,370	1,492,630
1901	15.3	17.6	17,429,230	865,770	18,295,000	.60	10,965,000	1,188,239
1902	13	18	12,680,800	825,045	13,532,845	.53	7,062,640	1,021,281
1903	12.6	16.9	9,481,350	1,435,380	10,916,730	.67	7,167,643	837,422
1904	9.1	14.3	7,080,430	1,017,000	8,097,430	.89	7,044,809	846,070
1905	14.4	20.2	5,155,760	1,253,020	6,408,780	.72	4,614,321	420,068
1906	15	23	5,603,880	1,566,050	7,169,930	.64	4,579,697	443,810
1907	13	19.8	4,402,320	1,698,101	6,100,421	.82	4,974,302	424,407
1908	15.4	19.7	4,968,250	1,678,540	6,646,790	.86	5,716,239	408,614
1909	12.5	18.2	3,809,460	3,621,953	7,431,413	.90	6,688,272	502,762
1910	19.3	18.5	6,773,799	3,635,405	10,409,204	.86	8,951,915	546,179
Average 15 yrs	13.9	17.1	10,425,436	1,802,153	12,235,383	$.70	$ 7,980,000	875,858

BARLEY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	23	4,600,000	$.42	$1,932,000	200,000
1885	27	5,737,095	.33	1,893,241	212,485
1890	24	3,664,368	.47	1,722,254	152,682

BARLEY—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Yea	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	29	15,881,618	$ .20	$3,176,320	547,642
1897	25	14,076,850	.23	3,237,670	551,867
1898	27.5	14,138,000	.30	4,209,740	509,580
1899	25.6	14,719,310	.30	4,415,570	557,598
1900	25.3	12,695,200	.33	4,189,410	501,740
1901	24.2	14,654,410	.44	6,447,940	604,610
1902	25	15,380,910	.33	5,075,710	594,070
1903	24.7	12,179,790	.37	4,506,522	493,108
1904	25	12,317,710	.34	4,188,021	493,370
1905	27.5	15,566,770	.33	5,137,034	565,700
1906	26.5	14,858,830	.36	5,349,178	558,870
1907	24.6	9,893,330	.60	5,935,998	397,210
1908	26.7	10,629,660	.50	5,314,830	307,408
1909	17.5	10,352,040	.46	4,761,938	562,622
1910	25.9	8,614,541	.56	4,824,143	324,571
Average 15 years	25.3	13,063,931	$ .38	$4,718,002	504,665

RYE—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	14	574,000	$.38	$218,120	41,000
1885	15	1,710,000	.42	718,200	114,000
1890	16	1,608,960	.51	820,570	100,560

RYE—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	16	1,891,716	$.25	$ 486,680	121,670
1897	15	3,490,344	.34	1,186,710	226,198
1898	16	3,370,550	.38	1,280,800	210,309
1899	16.3	2,061,160	.40	824,460	126,236
1900	15.6	1,621,130	.43	697,300	103,680
1901	15.8	859,630	.48	859,630	54,390
1902	17	882,830	.40	353,132	55,150
1903	15.6	1,923,060	.44	846,146	123,273
1904	15	1,517,090	.54	819,228	99,500
1905	18	1,283,500	.52	667,420	71,305
1906	17.5	1,093,160	.48	520,719	62,530
1907	17	900,060	.61	549,036	52,975
1908	17.1	869,072	.63	547,515	50,893
1909	13.4	556,846	.60	334,107	41,606
1910	13.8	407,058	.61	248,305	29,502
Average 15 years	15.9	1,515,147	$.47	$ 681,413	95,287

HAY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield tame hay	Total yield—tons	Average yield wild hay	Total yield—tons	Total yield all hay—tons	Average value per ton—tame hay	Average value per ton—wild hay	Total value—all hay	Acreage
*1880	-----	----------	------	----------	----------	------	------	----------	----------
*1885	-----	----------	------	----------	----------	------	------	----------	----------
1890	1.5	4,991,335	------	----------	----------	$6.84	------	$34,140,731	3,327,557

*No authentic data obtainable.

HAY—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield tame hay	Total yield—tons	Average yield wild hay	Total yield—tons	Total yield all hay—tons	Average value per ton—tame hay	Average value per ton—wild hay	Total value—all hay	Acreage
1896	1.5	3,376,440	1.5	2,325,000	5,701,440	$4.50	$3.30	$22,782,000	3,800,930
1897	1.6	3,362,287	1.3	1,939,117	5,301,320	4.50	3.70	22,304,000	3,315,972
1898	1.7	3,852,561	1.2	1,645,419	5,498,080	4.30	3.50	22,281,000	4,104,957
1899	1.5	3,852,941	1.2	1,458,195	5,311,130	5.75	4.90	29,350,000	3,742,655
1900	1.4	3,609,010	1	1,530,050	5,139,060	6.50	5.00	31,120,000	4,078,930
1901	1.4	3,711,680	1.2	1,268,700	4,980,380	8.25	6.30	38,712,000	3,608,450
1902	1.8	4,439,040	1.3	1,202,860	5,641,900	6.80	5.50	36,787,322	3,301,408
1903	1.9	5,216,404	1.3	1,191,345	6,407,749	5.75	4.95	35,891,480	3,651,891
1904	1.5	4,499,090	1.2	1,091,590	5,590,680	5.62	4.50	30,197,040	3,707,298
1905	1.8	6,477,300	1.2	1,313,310	7,790,610	5.50	4.50	41,535,045	4,692,925
1906	1.3	4,892,950	1.2	1,110,690	6,003,640	7.50	5.50	42,805,920	4,418,630
1907	1.5	5,117,878	1.3	1,172,590	6,290,468	8.50	6.75	51,316,945	4,268,730
1908	1.8	5,838,640	1.6	1,445,989	7,284,620	6.16	5.00	43,326,060	4,146,870
1909	1.7	5,828,580	1.4	1,219,630	7,048,210	7.42	5.90	50,443,781	4,299,740
1910	1.1	3,876,844	1.1	807,280	4,684,124	10.15	8.00	45,808,207	4,367,725
Av. 15 yrs	1.6	4,530,100	1.3	1,381,450	5,911,561	6.48	5.16	36,310,720	3,973,144

FLAX—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	10	1,034,200	$1.00	$1,034,200	103,420
*1885			.94	2,503,293	
1890	10.5	2,929,081	1.10	3,276,989	283,722

*No other data.

FLAX—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	9.5	1,946,720	$ .95	$1,135,000	199,128
1897	10	2,498,600	.87	2,173,782	249,882
1898	10.5	2,376,600	.80	1,901,280	225,014
1899	11.2	1,597,790	1.04	1,661,898	142,175
1900	11.7	1,222,980	1.50	1,834,470	108,850
1901	18.8	916,890	1.29	916,890	104,140
1902	8	755,350	1.00	725,350	94,767
1903	8.7	355,160	.78	277,024	40,823
1904	11	591,140	1.15	679,811	51,370
1905	9.8	173,770	.90	156,393	17,732
1906	10.7	205,280	.97	200,091	19,160
1907	10.8	461,960	.98	408,640	42,790
1908	11.3	461,580	1.01	466,195	40,833
1909	10	173,650	1.29	223,647	17,365
1910	8.6	170,387	2.28	388,482	19,821
Average 15 years	10.7	927,190	$1.12	$ 876,597	91,590

POTATOES—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

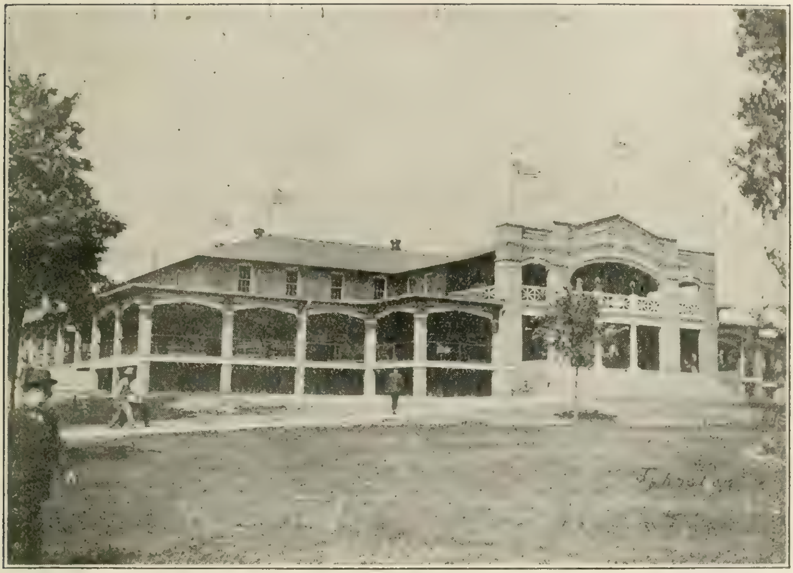
Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	95	10,165,000	$.35	$3,557,750	107,000
1885	82	12,874,000	.40	5,149,600	157,000
1890	49	8,332,352	.81	6,749,205	170,048

POTATOES—1896-1910.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	87	14,814,795	$.21	$2,962,950	170,285
1897	60	10,051,910	.45	4,523,360	163,248
1898	76	12,538,410	.31	3,826,900	164,456
1899	98	15,252,934	.24	3,660,714	154,243
1900	78	10,850,900	.40	4,340,360	149,680
*1901	37.4	5,098,460	.90	4,588,610	136,300
1902	91	12,051,670	.34	4,095,650	138,484
†1903	53.8	6,082,694	.75	4,562,020	113,433
1904	125	14,255,680	.28	3,991,590	113,250
1905	84	9,352,190	.50	4,676,045	111,335
1906	101	11,697,500	.48	5,614,800	115,310
1907	84	9,847,430	.62	6,105,406	117,350
1908	89.9	10,658,290	.59	6,288,391	118,517
1909	90	12,427,595	.53	6,586,625	138,139
1910	75.3	9,986,881	.58	5,792,391	132,640
Average 15 years	82	10,997,823	.48	$4,774,387	135,778

*Very dry.
†Very wet.



Administration Building—Iowa State Fair and Exposition Grounds

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Figures taken from the December, 1910, Supplement of the Crop

Acreage, production and value of corn in the United States in 1910, by states.

Number	State or Territory	Corn				
		Acreage	Yield per acre	Production	Price per bushel Dec. 1	Toral farm value Dec. 1
1	Maine	17,000	46.0	782,000	$.71	555,000
2	New Hampshire	31,000	46.0	1,426,000	.69	984,000
3	Vermont	67,000	43.0	2,881,000	.66	1,901,000
4	Massachusetts	50,000	45.5	2,275,000	.70	1,592,000
5	Rhode Island	11,000	40.0	440,000	.83	365,000
6	Connecticut	63,000	53.2	3,352,000	.68	2,279,000
7	New York	680,000	38.3	26,044,000	.63	16,408,000
8	New Jersey	290,000	36.0	10,440,000	.60	6,264,000
9	Pennsylvania	1,586,000	41.0	65,026,000	.59	38,365,000
10	Delaware	202,000	31.8	6,424,000	.52	3,340,000
11	Maryland	710,000	33.5	23,785,000	.58	13,795,000
12	Virginia	2,142,000	25.5	54,621,000	.65	35,504,000
13	West Virginia	920,000	26.0	23,920,000	.68	16,266,000
14	North Carolina	3,072,000	18.6	57,139,000	.76	43,426,000
15	South Carolina	2,418,000	18.5	44,733,000	.82	36,681,000
16	Georgia	4,532,000	14.5	65,714,000	.78	51,257,000
17	Florida	678,000	13.0	8,814,000	.85	7,492,000
18	Ohio	3,960,000	36.5	144,540,000	.46	66,488,000
19	Indiana	5,120,000	39.3	201,216,000	.40	80,486,000
20	Illinois	10,609,000	39.1	414,812,000	.38	157,629,000
21	Michigan	2,100,000	32.4	68,040,000	.53	36,061,000
22	Wisconsin	1,575,000	32.5	51,188,000	.52	26,618,000
23	Minnesota	1,724,000	32.7	56,375,000	.45	25,369,000
24	Iowa	9,473,000	36.3	343,870,000	.36	123,793,000
25	Missouri	8,300,000	33.0	273,900,000	.44	120,516,000
26	North Dakota	214,000	14.0	2,996,000	.58	1,738,000
27	South Dakota	2,162,000	25.0	54,050,000	.40	21,620,000
28	Nebraska	8,000,000	25.8	206,400,000	.36	74,304,000
29	Kansas	8,900,000	19.0	169,100,000	.45	76,095,000
30	Kentucky	3,630,000	29.0	105,270,000	.53	55,793,000
31	Tennessee	3,720,000	25.9	96,348,000	.56	53,955,000
32	Alabama	3,524,000	18.0	63,432,000	.71	45,037,000
33	Mississippi	3,232,000	20.5	66,256,000	.63	41,741,000
34	Louisiana	2,493,000	23.6	58,835,000	.55	32,359,000
35	Texas	8,800,000	20.6	181,280,000	.63	114,206,000
36	Oklahoma	5,772,000	16.0	92,352,000	.51	47,100,000
37	Arkansas	2,884,000	24.0	69,216,000	.58	40,145,000
38	Montana	8,000	23.0	184,000	.95	175.000
39	Wyoming	6,000	10.0	60,000	.66	40,000
40	Colorado	143,000	19.9	2,846,000	.60	1,708.000
41	New Mexico	70,000	23.0	1,610,000	.90	1,449,000
42	Arizona	12,000	32.5	390,000	1.10	429.000
43	Utah	13,000	30.3	394,000	.84	331,000
44	Nevada	----------	----	----------	----	----------
45	Idaho	6,000	32.0	192,000	.71	136,000
46	Washington	16,000	28.0	448,000	.75	336,000
47	Oregon	18,000	25.5	459,000	.80	367,000
48	California	49,000	37.5	1,838,000	.80	1,470,000
	United States	114,002,000	27.4	3,125,713,000	$.488	$1,523,968,000

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*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page 86 of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1910.

Reporter issued by the United States Department of Agriculture.
Acreage, production and value of wheat in the United States in 1910, by states.

Winter Wheat					Spring Wheat					
Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Number
----------	-----	----------	-----	----------	9,000	29.7	267,000	$1.02	$ 272,000	1
----------	-----	----------	-----	----------	----------	-----	----------	-----	----------	2
----------	-----	----------	-----	----------	1,000	29.3	29,000	1.03	30,000	3
----------	-----	----------	-----	----------	----------	-----	----------	-----	----------	4
----------	-----	----------	-----	----------	----------	-----	----------	-----	----------	5
----------	-----	----------	-----	----------	----------	-----	----------	-----	----------	6
444,000	23.7	10,523,000	$.96	$ 10,102,000	----------	-----	----------	-----	----------	7
111,000	18.5	2,053,000	.98	2,012,000	----------	-----	----------	-----	----------	8
1,556,000	17.8	27,697,000	.92	25,481,000	----------	-----	----------	-----	----------	9
122,000	17.0	2,074,000	.90	1,867,000	----------	-----	----------	-----	----------	10
794,000	17.4	13,816,000	.92	12,711,000	----------	-----	----------	-----	----------	11
795,000	12.8	10,176,000	.97	9,871,000	----------	-----	----------	-----	----------	12
410,000	12.5	5,125,000	1.02	5,228,000	----------	-----	----------	-----	----------	13
652,000	11.4	7,433,000	1.10	8,176,000	----------	-----	----------	-----	----------	14
453,000	11.0	4,983,000	1.26	6,279,000	----------	-----	----------	-----	----------	15
260,000	10.5	2,730,000	1.30	3,549,000	----------	-----	----------	-----	----------	16
----------	-----	----------	-----	----------	----------	-----	----------	-----	----------	17
1,944,000	16.2	31,493,000	.90	28,344,000	----------	-----	----------	-----	----------	18
2,627,000	15.6	40,981,000	.87	35,653,000	----------	-----	----------	-----	----------	19
2,100,000	15.0	31,500,000	.88	27,720,000	----------	-----	----------	-----	----------	20
869,000	18.0	15,642,000	.89	13,921,000	----------	-----	----------	-----	----------	21
67,000	20.0	1,340,000	.92	1,233,000	124,000	18.7	2,319,000	.92	2,133,000	22
----------	-----	----------	-----	----------	5,880,000	16.0	94,080,000	.94	88,435,000	23
180,000	21.2	3,816,000	.85	3,244,000	350,000	20.9	7,315,000	.85	6,218,000	24
1,821,000	13.8	25,130,000	.87	21,863,000	----------	-----	----------	-----	----------	25
----------	-----	----------	-----	----------	7,221,000	5.0	36,105,000	.90	32,494,000	26
----------	-----	----------	-----	----------	3,650,000	12.8	46,720,000	.89	41,581,000	27
2,100,000	16.5	34,650,000	.80	27,720,000	350,000	13.9	4,865,000	.80	3,892,000	28
4,300,000	14.2	61,060,000	.84	51,290,000	120,000	8.4	1,008,000	.84	847,000	29
750,000	12.8	9,600,000	.93	8,928,000	----------	-----	----------	-----	----------	30
910,000	11.7	10,647,000	.98	10,434,000	----------	-----	----------	-----	----------	31
130,000	12.0	1,560,000	1.13	1,763,000	----------	-----	----------	-----	----------	32
5,000	14.0	70,000	1.16	81,000	----------	-----	----------	-----	----------	33
----------	-----	----------	-----	----------	----------	-----	----------	-----	----------	34
1,252,000	15.0	18,780,000	.98	18,404,000	----------	-----	----------	-----	----------	35
1,556,000	16.3	25,363,000	.87	22,066,000	----------	-----	----------	-----	----------	36
195,000	13.9	2,710,000	.94	2,547,000	----------	-----	----------	-----	----------	37
285,000	22.0	6,270,000	.86	5,392,000	195,000	22.0	4,290,000	.86	3,689,000	38
42,000	25.0	1,050,000	.95	998,000	65,000	25.0	1,625,000	.95	1,544,000	39
104,000	23.0	2,392,000	.82	1,961,000	289,000	21.9	6,329,000	.82	5,190,000	40
----------	-----	----------	-----	----------	43,000	20.0	860,000	1.00	860,000	41
----------	-----	----------	-----	----------	17,000	22.3	379,000	1.20	455,000	42
155,000	20.5	3,178,000	.84	2,670,000	100,000	25.3	2,530,000	.84	2,125,000	43
----------	-----	----------	-----	----------	40,000	29.0	1,160,000	1.09	1,264,000	44
345,000	23.7	8,176,000	.72	5,887,000	217,000	20.4	4,427,000	.72	3,187,000	45
676,000	20.5	13,858,000	.78	10,800,000	810,000	14.5	11,745,000	.78	9,161,000	46
467,000	23.7	11,068,000	.84	9,297,000	297,000	18.0	5,346,000	.84	4,491,000	47
950,000	18.0	17,100,000	.94	16,074,000	----------	-----	----------	-----	----------	48
29,427,000	15.8	464,044,000	$.891	$413,575,000	19,778,000	11.7	231,399,000	$.898	$207,868,000	

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Number	State or Territory	Buckwheat				
		Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
1	Maine	131,000	42.4	5,554,000	$.48	$2,666,000
2	New Hampshire	14,000	42.8	599,000	.51	305,000
3	Vermont	85,000	41.5	3,528,000	.50	1,764,000
4	Massachusetts	7,000	35.5	248,000	.50	124,000
5	Rhode Island	2,000	35.0	70,000	.48	34,000
6	Connecticut	11,000	36.8	405,000	.44	178,000
7	New York	1,338,000	34.5	46,161,000	.42	19,388,000
8	New Jersey	60,000	37.1	2,226,000	.44	979,000
9	Pennsylvania	998,000	35.2	35,130,000	.41	14,403,000
10	Delaware	4,000	33.8	135,000	.43	58,000
11	Maryland	27,000	30.0	810,000	.46	373,000
12	Virginia	194,000	22.0	4,268,000	.49	2,091,000
13	West Virginia	100,000	25.2	2,520,000	.50	1,260,000
14	North Carolina	190,000	18.2	3,458,000	.60	2,075,000
15	South Carolina	219,000	21.0	4,599,000	.65	2,989,000
16	Georgia	343,000	18.2	6,243,000	.64	3,996,000
17	Florida	31,000	16.2	502,000	.65	326,000
18	Ohio	1,765,000	37.2	65,658,000	.35	22,980,000
19	Indiana	1,850,000	35.4	65,490,000	.31	20,302,000
20	Illinois	4,500,000	38.0	171,000,000	.30	51,300,000
21	Michigan	1,505,000	34.0	51,170,000	.35	17,910,000
22	Wisconsin	2,320,000	29.8	69,136,000	.34	23,506,000
23	Minnesota	2,736,000	28.7	78,523,000	.32	25,127,000
24	Iowa	4,800,000	37.8	181,440,000	.27	48,989,000
25	Missouri	780,000	33.6	26,208,000	.32	8,387,000
26	North Dakota	1,628,000	7.0	11,396,000	.37	4,217,000
27	South Dakota	1,525,000	23.0	35,075,000	.30	10,522,000
28	Nebraska	2,650,000	28.0	74,200,000	.28	20,776,000
29	Kansas	1,400,000	33.3	46,620,000	.34	15,851,000
30	Kentucky	170,000	25.0	4,250,000	.45	1,912,000
31	Tennessee	200,000	23.0	4,600,000	.46	2,116,000
32	Alabama	297,000	18.5	5,494,000	.60	3,296,000
33	Mississippi	175,000	19.2	3,360,000	.55	1,848,000
34	Louisiana	36,000	21.5	774,000	.49	379,000
35	Texas	695,000	35.0	24,325,000	.47	11,433,000
36	Oklahoma	632,000	36.5	23,068,000	.37	8,535,000
37	Arkansas	172,000	27.5	4,730,000	.46	2,176,000
38	Montana	350,000	38.0	13,300,000	.46	6,118,000
39	Wyoming	130,000	32.0	4,160,000	.50	2,080,000
40	Colorado	202,000	39.1	7,898,000	.46	3,633,000
41	New Mexico	30,000	27.4	822,000	.62	510,000
42	Arizona	4,000	40.1	160,000	.90	144,000
43	Utah	58,000	43.0	2,494,000	.48	1,197,000
44	Nevada	7,000	44.7	313,000	.63	197,000
45	Idaho	184,000	38.5	7,084,000	.42	2,975,000
46	Washington	206,000	42.8	8,817,000	.48	4,232,000
47	Oregon	302,000	34.5	10,419,000	.47	4,897,000
48	California	225,000	37.0	8,325,000	.50	4,162,000
	United States	35,288,000	31.9	1,126,765,000	$.341	$384,716,000

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*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page 86 of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1910.—Con.

Barley					Rye					
Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Number
8,000	31.0	248,000	$.76	$ 188,000	-----	-----	-----	-----	-----	1
2,000	26.0	52,000	.77	40,000	-----	-----	-----	-----	-----	2
15,000	31.0	465,000	.68	316,000	2,000	17.5	35,000	$.85	30,000	3
-----	-----	-----	-----	-----	5,000	17.0	85,000	.94	80,000	4
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	5
-----	-----	-----	-----	-----	10,000	20.0	200,000	.86	172,000	6
78,000	28.3	2,207,000	.70	1,545,000	170,000	18.3	3,111,000	.74	2,302,000	7
-----	-----	-----	-----	-----	85,000	18.0	1,530,000	.77	1,178,000	8
9,000	26.5	238,000	.63	150,000	380,000	17.0	6,460,000	.73	4,716,000	9
-----	-----	-----	-----	-----	1,000	15.5	16,000	.69	11,000	10
1,000	31.0	31,000	.61	19,000	21,000	16.1	338,000	.75	254,000	11
3,000	29.3	88,000	.67	59,000	20,000	13.5	270,000	.80	216,000	12
-----	-----	-----	-----	-----	12,000	12.9	155,000	.90	140,000	13
-----	-----	-----	-----	-----	15,000	10.0	150,000	1.01	152,000	14
-----	-----	-----	-----	-----	4,000	10.0	40,000	1.46	58,000	15
-----	-----	-----	-----	-----	14,000	10.4	146,000	1.40	204,000	16
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	17
31,000	28.5	884,000	.60	530,000	56,000	16.5	924,000	.72	665,000	18
9,000	27.0	243,000	.56	136,000	55,000	15.8	869,000	.68	591,000	19
30,000	30.2	906,000	.56	507,000	70,000	17.4	1,218,000	.71	865,000	20
67,000	26.0	1,742,000	.58	1,010,000	350,000	15.3	5,355,000	.68	3,641,000	21
866,000	25.9	22,429,000	.64	14,355,000	305,000	16.0	4,880,000	.71	3,465,000	22
1,285,000	21.0	26,985,000	.60	16,191,000	115,000	17.0	1,955,000	.64	1,251,000	23
510,000	29.5	15,045,000	.56	8,425,000	32,000	18.5	592,000	.64	379,000	24
2,000	27.0	54,000	.60	32,000	14,000	15.0	210,000	.75	158,000	25
987,000	5.5	5,428,000	.55	2,985,000	15,000	8.5	128,000	.63	81,000	26
1,025,000	18.2	18,655,000	.57	10,633,000	35,000	17.0	595,000	.61	363,000	27
135,000	18.5	2,498,000	.45	1,124,000	75,000	16.0	1,200,000	.60	720,000	28
300,000	18.0	5,400,000	.45	2,430,000	38,000	14.0	532,000	.73	388,000	29
1,000	24.0	24,000	.65	16,000	13,000	13.0	160,000	.85	144,000	30
1,000	23.0	23,000	.80	18,000	8,000	11.0	88,000	.92	81,000	31
-----	-----	-----	-----	-----	2,000	12.0	24,000	1.20	29,000	32
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	33
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	34
5,000	30.0	150,000	.90	135,000	4,000	11.5	46,000	1.03	47,000	35
32,000	30.0	960,000	.54	518,000	4,000	13.7	55,000	.81	45,000	36
-----	-----	-----	-----	-----	2,000	12.0	24,000	.98	24,000	37
52,000	28.0	1,456,000	.62	903,000	4,000	20.0	80,000	.68	54,000	38
4,000	30.0	120,000	.67	80,000	1,000	18.5	18,000	.81	15,000	39
27,000	32.0	864,000	.60	518,000	5,000	14.0	70,000	.67	47,000	40
1,000	25.0	25,000	.80	20,000	-----	-----	-----	-----	-----	41
34,000	36.0	1,224,000	.90	1,102,000	-----	-----	-----	-----	-----	42
13,000	36.0	468,000	.60	281,000	3,000	18.5	56,000	.68	38,000	43
9,000	40.0	360,000	.70	252,000	-----	-----	-----	-----	-----	44
65,000	33.0	2,145,000	.50	1,072,000	4,000	20.0	80,000	.66	53,000	45
186,000	29.0	5,394,000	.57	3,075,000	6,000	20.5	123,000	.89	109,000	46
64,000	31.5	2,016,000	.62	1,250,000	15,000	15.1	226,000	1.00	226,000	47
1,400,000	31.0	43,400,000	.55	23,870,000	58,000	17.0	986,000	.86	848,000	48
7,257,000	22.4	162,227,000	$.578	$ 93,785,000	2,028,000	16.3	33,039,000	$.722	$ 23,840,000	

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Number	State or Territory	Oats				
		Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
1	Maine	23,000	32.5	748,000	$.68	$ 509,000
2	New Hampshire	2,000	31.0	62,000	.62	38,000
3	Vermont	8,000	24.0	192,000	.70	134,000
4	Massachusetts	3,000	22.0	66,000	.85	56,000
5	Rhode Island	-----	-----	-----	-----	-----
6	Connecticut	3,000	19.5	58,000	.83	48,000
7	New York	313,000	23.0	7,199,000	.65	4,679,000
8	New Jersey	13,000	21.5	280,000	.69	193,000
9	Pennsylvania	290,000	19.5	5,655,000	.62	3,506,000
10	Delaware	2,000	20.5	41,000	.65	27,000
11	Maryland	9,000	18.5	166,000	.66	110,000
12	Virginia	21,000	18.0	37,0800	.77	291,000
13	West Virginia	25,000	23.0	575,000	.77	443,000
14	North Carolina	5,000	19.0	95,000	.80	76,000
15	South Carolina	-----	-----	-----	-----	-----
16	Georgia	-----	-----	-----	-----	-----
17	Florida	-----	-----	-----	-----	-----
18	Ohio	14,000	18.0	252,000	.75	189,000
19	Indiana	5,000	17.7	88,000	.70	62,000
20	Illinois	4,000	20.0	80,000	.90	72,000
21	Michigan	55,000	15.3	842,000	.62	522,000
22	Wisconsin	14,000	14.0	196,000	.75	147,000
23	Minnesota	4,000	16.0	64,000	.72	46,000
24	Iowa	8,000	14.9	119,000	.83	99,000
25	Missouri	2,000	16.5	33,000	.87	29,000
26	North Dakota	-----	-----	-----	-----	-----
27	South Dakota	-----	-----	-----	-----	-----
28	Nebraska	1,000	20.0	20,000	.90	18,000
29	Kansas	1,000	15.0	15,000	.90	14,000
30	Kentucky	-----	-----	-----	-----	-----
31	Tennessee	1,000	15.0	15,000	.86	13,000
32	Alabama	-----	-----	-----	-----	-----
33	Mississippi	-----	-----	-----	-----	-----
34	Louisiana	-----	-----	-----	-----	-----
35	Texas	-----	-----	-----	-----	-----
36	Oklahoma	-----	-----	-----	-----	-----
37	Arkansas	-----	-----	-----	-----	-----
38	Montana	-----	-----	-----	-----	-----
39	Wyoming	-----	-----	-----	-----	-----
40	Colorado	-----	-----	-----	-----	-----
41	New Mexico	-----	-----	-----	-----	-----
42	Arizona	-----	-----	-----	-----	-----
43	Utah	-----	-----	-----	-----	-----
44	Nevada	-----	-----	-----	-----	-----
45	Idaho	-----	-----	-----	-----	-----
46	Washington	-----	-----	-----	-----	-----
47	Oregon	-----	-----	-----	-----	-----
48	California	-----	-----	-----	-----	-----
	United States	826,000	20.9	17,239,000	$.657	$11,321,000

*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page 86 of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1910.—Con.

Flaxseed					Rice					
Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	creage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1	Number
										1
										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
					1,000	26.5	27,000	$.75	$ 20,000	14
					17,000	21.0	357,000	.75	268,000	15
					4,000	22.0	88,000	.75	66,000	16
					900	21.0	19,000	.72	14,000	17
										18
										19
										20
										21
18,000	10.0	180,000	$2.20	396,000						22
472,000	7.5	3,540,000	2.30	8,142,000						23
16,000	12.2	195,000	2.20	429,000						24
20,000	8.4	168,000	2.10	353,000						25
1,605,000	3.6	5,778,000	2.35	13,578,000						26
660,000	5.0	3,300,000	2.29	7,557,000						27
10,000	8.0	80,000	2.25	180,000						28
50,000	8.2	410,000	2.10	861,000						29
										30
										31
					1,000	25.0	25,000	.70	18,000	32
					2,800	30.0	84,000	.70	59,000	33
					371,200	34.4	12,769,000	.67	8,555,000	34
					264,800	33.0	8,738,000	.68	5,942,000	35
5,000	9.0	45,000	1.12	50,000						36
					60,000	40.0	2,400,000	.70	1,680,000	37
60,000	7.0	420,000	2.40	1,008,000						38
										39
										40
										41
										42
										43
										44
										45
										46
										47
					100	33.0	3,000	.65	2,000	48
2,916,000	4.8	14,116,000	2.306	$ 32,554,000	722,800	33.9	24,510,000	$.678	$ 16,624,000	

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Number	State or Territory	Potatoes				
		Acreage	Yield per acre	Production	Price per bushel Dec. 1	Total farm value Dec. 1
1	Maine	127,000	220	27,940,000	$.42	$11,735,000
2	New Hampshire	21,000	150	3,150,000	.52	1,638,000
3	Vermont	29,000	130	3,770,000	.45	1,696,000
4	Massachusetts	35,000	125	4,375,000	.70	3,062,000
5	Rhode Island	6,000	136	816,000	.69	563,000
6	Connecticut	35,000	125	4,375,000	.70	3,062,000
7	New York	438,000	102	44,676,000	.48	21,444,000
8	New Jersey	95,000	105	9,975,000	.65	6,484,000
9	Pennsylvania	320,000	88	28,160,000	.52	14,643,000
10	Delaware	10,000	103	1,030,000	.60	618,000
11	Maryland	36,000	95	3,420,000	.54	1,847,000
12	Virginia	67,000	98	6,566,000	.58	3,808,000
13	West Virginia	41,000	92	3,772,000	.67	2,527,000
14	North Carolina	26,000	89	2,314,000	.73	1,689,000
15	South Carolina	10,000	90	900,000	1.05	945,000
16	Georgia	10,000	82	820,000	1.05	861,000
17	Florida	6,000	90	540,000	1.00	540,000
18	Ohio	182,000	82	14,924,000	.51	7,611,000
19	Indiana	92,000	84	7,728,000	.50	3,864,000
20	Illinois	169,000	75	12,675,000	.59	7,478,000
21	Michigan	335,000	105	35,175,000	.31	10,904,000
22	Wisconsin	260,000	95	24,700,000	.38	9,386,000
23	Minnesota	165,000	61	10,065,000	.64	6,442,000
24	Iowa	170,000	72	12,240,000	.60	7,344,000
25	Missouri	92,000	86	7,912,000	.68	5,380,000
26	North Dakota	35,000	41	1,435,000	.91	1,306,000
27	South Dakota	55,000	44	2,420,000	.85	2,057,000
28	Nebraska	110,000	60	6,600,000	.84	5,544,000
29	Kansas	88,000	57	5,016,000	.90	4,514,000
30	Kentucky	41,000	92	3,772,000	.62	2,339,000
31	Tennessee	30,000	80	2,400,000	.65	1,560,000
32	Alabama	18,000	80	1,440,000	.94	1,354,000
33	Mississippi	9,000	85	765,000	.94	719,000
34	Louisiana	20,000	55	1,100,000	.90	990,000
35	Texas	60,000	51	3,060,000	1.10	3,366,000
36	Oklahoma	26,000	60	1,560,000	1.00	1,560,000
37	Arkansas	31,000	84	2,604,000	.85	2,213,000
38	Montana	25,000	120	3,000,000	.85	2,550,000
39	Wyoming	11,000	100	1,100,000	.82	902,000
40	Colorado	65,000	100	6,500,000	.55	3,575,000
41	New Mexico	2,000	47	94,000	1.04	98,000
42	Arizona	----------	----	----------	----	----------
43	Utah	15,000	142	2,130,000	.59	1,257,000
44	Nevada	4,000	150	600,000	.80	480,000
45	Idaho	24,000	142	3,408,000	.65	2,215,000
46	Washington	39,000	131	5,109,000	.73	3,730,000
47	Oregon	44,000	105	4,620,000	.70	3,234,000
48	California	62,000	130	8,060,000	.85	6,851,000
	United States	3,591,000	94.4	338,811,000	$.555	$187,985,000

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*Statistics by counties, showing acreage, average yield and total yield of Iowa farm crops, compiled by the Iowa Department of Agriculture, from reports received, as required by Chapter 86, section 1, Acts of the Thirty-third General Assembly will be found in part 3, page of this year book.

PAL FARM CROPS OF THE UNITED STATES IN 1910.—Con.

Hay					Tobacco					
Acreage	Yield per acre	Production	Price per ton Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per pound Dec. 1	Total farm value Dec 1	Number
1,400,000	1.25	1,750,000	$12.80	$ 22,400,000	----------	-----	----------	-----	----------	1
640,000	1.20	768,000	15.80	12,134,000	100	1,720	172,000	$.15	$ 25,800	2
930,000	1.35	1,236,000	12.40	15,574,000	200	1,600	320,000	.145	46,400	3
590,000	1.28	755,000	19.10	14,420,000	4,400	1,730	7,612,000	.15	1,141,800	4
63,000	1.18	74,000	19.60	1,450,000	----------	-----	----------	-----	----------	5
490,000	1.35	662,000	19.00	12,578,000	13,400	1,730	23,182,000	.165	3,825,030	6
4,811,000	1.32	6,351,000	13.70	87,009,000	5,900	1,250	7,375,000	.085	626,875	7
437,000	1.50	656,000	18.20	11,939,000	----------	-----	----------	-----	----------	8
3,212,000	1.38	4,433,000	15.00	66,495,000	33,000	1,500	49,500,000	.093	4,603,500	9
77,000	1.43	110,000	14.80	1,628,000	----------	-----	----------	-----	----------	10
291,000	1.35	393,000	15.40	6,052,000	28,500	690	19,665,000	.077	1,514,205	11
475,000	1.19	565,000	14.50	8,192,000	160,000	780	124,800,000	.09	11,232,000	12
675,000	1.20	810,000	15.00	12,150,000	20,000	640	12,800,000	.103	1,318,400	13
175,000	1.50	262,000	14.60	3,825,000	216,000	600	129,600,000	.106	13,737,600	14
67,000	1.25	84,000	16.00	1,344,000	30,000	630	18,900,000	.086	1,625,400	15
87,000	1.40	122,000	16.40	2,001,000	1,600	680	1,088,000	.29	217,600	16
19,000	1.33	25,000	17.00	425,000	3,500	680	2,380,000	.23	547,400	17
2,840,000	1.39	3,948,000	12.50	49,350,000	92,700	810	75,087,000	.085	6,382,395	18
2,100,000	1.30	2,730,000	11.90	32,487,000	27,000	880	23,760,000	.095	2,257,200	19
2,795,000	1.33	3,717,000	12.00	44,604,000	1,600	790	1,264,000	.095	120,080	20
2,592,000	1.30	3,370,000	13.60	45,832,000	----------	-----	----------	-----	----------	21
2,260,000	1.00	2,260,000	15.10	34,126,000	30,200	1,050	31,710,000	.075	2,378,250	22
908,000	1.00	908,000	9.10	8,263,000	----------	-----	----------	-----	----------	23
3,600,000	1.05	3,780,000	9.60	36,288,000	----------	-----	----------	-----	----------	24
2,700,000	1.30	3,510,000	9.20	32,292,000	7,500	1,050	7,875,000	.12	945,000	25
188,000	.55	103,000	7.60	783,000	----------	-----	----------	-----	----------	26
510,000	.80	408,000	7.10	2,897,000	----------	-----	----------	-----	----------	27
1,500,000	1.00	1,500,000	8.90	13,350,000	----------	-----	----------	-----	----------	28
1,792,000	1.15	2,061,000	7.80	16,076,000	----------	-----	----------	-----	----------	29
500,000	1.29	645,000	13.10	8,450,000	470,400	810	381,024,000	.087	33,149,088	30
455,000	1.40	637,000	13.40	8,536,000	85,000	760	64,600,000	.084	5,426,400	31
120,000	1.43	172,000	13.20	2,270,000	600	500	300,000	.20	60,000	32
100,000	1.42	142,000	12.20	1,732,000	100	550	55,000	.20	11,000	33
25,000	1.75	44,000	11.50	506,000	500	550	275,000	.25	68,750	34
618,000	1.15	711,000	12.00	8,532,000	700	600	420,000	.25	105,000	35
900,000	1.05	945,000	8.40	7,938,000	----------	-----	----------	-----	----------	36
210,000	1.35	284,000	11.00	3,124,000	900	650	585,000	.16	93,600	37
600,000	1.40	840,000	12.50	10,500,000	----------	-----	----------	-----	----------	38
300,000	2.40	720,000	12.50	9,000,000	----------	-----	----------	-----	----------	39
700,000	2.00	1,400,000	10.80	15,120,000	----------	-----	----------	-----	----------	40
194,000	2.10	407,000	11.50	4,680,000	----------	-----	----------	-----	----------	41
116,000	2.10	244,000	13.00	3,172,000	----------	-----	----------	-----	----------	42
380,000	3.00	1,140,000	9.00	10,260,000	----------	-----	----------	-----	----------	43
231,000	3.40	785,000	10.80	8,478,000	----------	-----	----------	-----	----------	44
491,000	3.00	1,473,000	9.00	13,257,000	----------	-----	----------	-----	----------	45
388,000	2.10	815,000	15.70	12,796,000	----------	-----	----------	-----	----------	46
439,000	2.10	922,000	12.10	11,156,000	----------	-----	----------	-----	----------	47
700,000	1.83	1,281,000	9.60	12,298,000	----------	-----	----------	-----	----------	48
45,691,000	1.33	60,978,000	$12.26	$747,769,000	1,233,800	797.8	984,349,000	$.093	$ 91,458,773	

STATISTICS OF THE PRINCIPAL CROPS.

(Figures furnished by the Bureau of Statistics, Department of Agriculture, except where otherwise credited. All prices on gold basis.)

CORN.

Corn crop of countries named, 1905-1909.

Country	1905 Bushels	1906 Bushels	1907 Bush	1908 Bushels	1909 Bushels
NORTH AMERICA.					
United States	2,707,994,000	2,927,416,000	2,592,320,000	2,668,651,000	2,772,376,000
Canada:					
Ontario	20,923,000	23,989,000	21,899,000	21,742,000	18,211,000
Quebec			1,377,000	1,126,000	1,047,000
Mexico	86,544,000	110,065,000	100,000,000	100,000,000	100,000,000
Total	2,815,461,000	3,061,470,000	2,715,596,000	2,791,519,000	2,891,634,000
SOUTH AMERICA.					
Argentina	140,708,000	194,912,000	71,768,000	136,055,000	177,155,000
Chile	1,244,000	846,000	1,500,000	1,218,000	1,178,000
Uruguay	4,417,000	3,226,000	5,359,000	6,000,000	6,671,000
Total	146,369,000	198,984,000	78,627,000	143,273,000	185,004,000
EUROPE.					
Austria-Hungary:					
Austria	17,293,000	18,177,000	16,599,000	15,170,000	16,102,000
Hungary proper	94,045,000	162,925,000	155,619,000	146,124,000	161,858,000
Croatia-Slavonia	18,385,000	20,470,000	17,934,000	20,536,000	21,752,000
Bosnia-Herzegovina	9,584,000	8,900,000	6,468,000	8,821,000	10,972,000
Total Austria-Hungary	139,307,000	210,472,000	196,620,000	190,651,000	210,684,000
Bulgaria	18,141,000	27,780,000	14,080,000	20,717,000	20,472,000
France	24,030,000	14,581,000	24,027,000	25,974,000	26,075,000
Italy	97,266,000	93,007,000	88,513,000	95,953,000	99,289,000
Portugal	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000
Roumania	59,275,000	130,546,000	57,576,000	78,892,000	70,138,000
Russia:					
Russia proper	22,533,000	59,320,000	41,903,000	49,663,000	29,223,000
Poland			1,000		
Northern Caucasia	10,798,000	11,181,000	8,860,000	11,449,000	10,375,000
Total Russia (European)	33,331,000	70,501,000	50,764,000	61,112,000	39,598,000
Servia	21,431,000	27,786,000	17,691,000	21,010,000	27,558,000
Spain	31,880,000	18,714,000	25,372,000	20,115,000	26,433,000
Total	439,661,000	608,387,000	489,643,000	529,424,000	535,247,000
AFRICA.					
Algeria	490,000	544,000	102,000	426,000	807,000
Egypt	30,000,000	30,000,000	35,000,000	30,000,000	30,000,000
Sudan (Anglo-Egyptian)	320,000	300,000	300,000	300,000	300,000
Union of South Africa	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000
Total	50,810,000	50,844,000	55,702,000	50,726,000	51,107,000
AUSTRALASIA.					
Australia:					
Queensland	2,623,000	2,233,000	3,820,000	3,191,000	2,855,000
New South Wales	5,107,000	5,714,000	5,945,000	4,671,000	5,380,000

CORN—Continued

Country	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
Victoria	643,000	661,000	727,000	525,000	671,000
Western Australia	1,000	1,000	1,000	1,000	2,000
Total	8,374,000	8,609,000	10,493,000	8,388,000	8,908,000
New Zealand	506,000	653,000	419,000	519,000	736,000
Total Australasia	8,880,000	9,262,000	10,912,000	8,907,000	9,644,000
Grand Total	3,461,181,000	3,928,947,000	3,350,480,000	3,523,849,000	3,672,636,000

WHEAT.

Wheat crop of countries named, 1906-1910.

Country	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels	1910 Bushels
NORTH AMERICA.					
United States	735,261,000	634,087,000	664,602,000	737,189,000	695,443,000
Canada:					
New Brunswick	407,000	411,000	349,000	395,000	371,000
Ontario	22,109,000	18,019,000	18,057,000	16,262,000	17,805,000
Manitoba	61,250,000	39,688,000	50,269,000	52,706,000	41,159,000
Saskatchewan	37,040,000	27,692,000	34,742,000	85,197,000	81,139,000
Alberta	3,966,000	4,194,000	6,842,000	9,579,000	6,593,000
Other	3,000,000	2,687,000	2,175,000	2,605,000	2,923,000
Total Canada	127,772,000	92,691,000	112,434,000	166,744,000	149,990,000
Mexico	12,862,000	10,000,000	10,000,000	10,000,000	10,000,000
Total	875,895,000	736,778,000	787,036,000	913,933,000	855,433,000
SOUTH AMERICA.					
Argentina	134,931,000	155,993,000	192,489,000	156,162,000	131,010,000
Chile	12,157,000	15,776,000	18,967,000	17,743,000	19,743,000
Uruguay	4,606,000	6,867,000	7,430,000	8,595,000	9,000,000
Total	151,694,000	178,636,000	218,886,000	182,500,000	159,753,000
EUROPE.					
Austria-Hungary:					
Austria	58,255,000	52,369,000	62,129,000	58,468,000	57,589,000
Hungary proper	197,409,000	120,509,000	152,205,000	113,352,000	181,145,000
Croatia-Slavonia	10,351,000	10,170,000	13,220,000	11,662,000	13,489,000
Bosnia-Herzegovina	2,693,000	2,169,000	3,023,000	2,594,000	2,939,000
Total Austria-Hungary	268,708,000	185,217,000	230,577,000	186,076,000	255,162,000
Belgium	12,964,000	15,835,000	13,393,000	15,506,000	14,000,000
Bulgaria	39,109,000	23,545,000	36,496,000	32,071,000	49,126,000
Denmark	4,161,000	4,343,000	4,318,000	3,829,000	4,737,000
Finland	151,000	140,000	135,000	135,000	135,000
France	324,919,000	376,999,000	317,765,000	356,193,000	268,364,000
Germany	144,754,000	127,843,000	138,442,000	138,000,000	141,884,000
Greece	8,000,000	8,000,000	8,000,000	7,000,000	7,000,000
Italy	176,464,000	177,543,000	152,236,000	189,959,000	153,337,000
Montenegro	200,000	200,000	200,000	200,000	200,000
Netherlands	4,942,000	5,325,000	5,121,000	4,158,000	4,324,000
Norway	303,000	290,000	333,000	313,000	294,000
Portugal	9,000,000	6,000,000	5,000,000	5,000,000	6,000,000
Roumania	113,867,000	42,257,000	54,813,000	56,751,000	110,761,000
Russia:					
Russia proper	344,765,000	340,416,000	383,016,000	586,819,000	-------------
Poland	21,152,000	18,173,000	21,182,000	21,194,000	-------------
Northern Caucasia	85,046,000	79,184,000	84,964,000	103,465,000	-------------
Total Russia (European)	450,963,000	437,773,000	489,162,000	711,478,000	699,413,000

WHEAT—Continued

Country	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels	1910 Bushels
Servia	13,211,000	8,375,000	11,495,000	13,962,000	10,000,000
Spain	140,656,000	100,331,000	119,970,000	144,105,000	137,448,000
Sweden	6,650,000	6,279,000	6,756,000	6,978,000	7,450,000
Switzerland	4,000,000	4,000,000	3,527,000	3,568,000	3,417,000
Turkey (European)	25,000,000	18,000,000	20,000,000	20,000,000	19,462,000
United Kingdom:					
Great Britain—					
England	57,583,000	53,855,000	51,371,000	60,121,000	55,067,000
Scotland	2,063,000	1,953,000	1,851,000	2,111,000	2,088,000
Wales	1,308,000	1,138,000	966,000	1,147,000	1,146,000
Ireland	1,575,000	1,367,000	1,438,000	1,809,000	1,716,000
Total United Kingdom	62,529,000	58,313,000	55,629,000	65,188,000	60,017,000
Total	1,810,551,000	1,606,608,000	1,673,368,000	1,960,470,000	1,952,531,000
ASIA.					
British India, including such native states as report	319,952,000	317,023,000	227,983,000	284,361,000	357,941,000
Cyprus	2,410,000	2,636,000	2,601,000	2,600,000	2,600,000
Japanese Empire:					
Japan	20,283,000	22,932,000	22,587,000	23,010,000	20,129,000
Formosa	178,000	200,000	200,000	200,000	200,000
Total Japanese Empire	20,461,000	23,132,000	22,787,000	23,210,000	29,329,000
Persia	16,000,000	16,000,000	16,000,000	16,000,000	16,000,000
Russia:					
Central Asia	11,486,000	27,085,000	21,416,000	26,429,000	------------
Siberia	45,833,000	45,771,000	55,755,000	45,269,000	------------
Transcaucasia	108,000	63,000	66,000	94,000	------------
Total Russia (Asiatic)	57,427,000	72,919,000	77,237,000	71,792,000	76,282,000
AFRICA.					
Algeria	34,323,000	31,261,000	29,739,000	34,769,000	39,374,000
Egypt	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000
Sudan (Anglo-Egyptian)	542,000	500,000	500,000	500,000	500,000
Tunis	4,906,000	6,314,000	2,838,000	6,430,000	5,512,000
Union of South Africa	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Total	67,271,000	65,575,000	60,577,000	69,199,000	72,886,000
AUSTRALASIA.					
Australia:					
Queensland	1,173,000	1,144,000	715,000	1,241,000	1,621,000
New South Wales	21,391,000	22,506,000	9,444,000	15,971,000	29,431,000
Victoria	24,156,000	23,331,000	12,482,000	24,082,000	29,687,000
South Australia	20,778,000	18,017,000	19,739,000	20,009,000	25,926,000
Western Australia	2,381,000	2,845,000	3,018,000	2,535,000	5,779,000
Tasmania	801,000	672,000	665,000	825,000	819,000
Total Australia	70,680,000	68,515,000	46,063,000	64,663,000	93,263,000
New Zealand	7,013,000	5,782,000	5,743,000	9,049,000	8,934,000
Total Australasia	77,693,000	74,297,000	51,806,000	73,712,000	102,197,000
Grand total	3,434,351,000	3,128,604,000	3,173,281,000	3,632,777,000	3,650,952,000

OATS.

Oat crop of countries named, 1906-1910.

Country	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels	1910 Bushels
NORTH AMERICA.					
United States	964,905,000	754,443,000	807,156,000	1,007,353,000	1,126,765,000
Canada:					
New Brunswick	6,052,000	6,107,000	5,373,000	6,136,000	6,748,000
Ontario	115,113,000	88,745,000	110,310,000	116,017,000	136,974,000
Manitoba	53,861,000	44,775,000	47,506,000	58,721,000	44,351,000
Saskatchewan	25,463,000	24,773,000	31,030,000	97,533,000	65,203,000
Alberta	13,958,000	9,826,000	24,227,000	40,775,000	25,122,000
Other	45,687,000	54,981,000	47,580,000	56,376,000	65,267,000
Total Canada	260,134,000	229,217,000	266,026,000	375,558,000	343,665,000
Mexico	17,000	17,000	17,000	17,000	17,000
Total	1,225,056,000	983,677,000	1,073,199,000	1,382,928,000	1,470,447,000
EUROPE.					
Austria-Hungary:					
Austria	154,551,000	170,605,000	144,069,000	171,940,000	142,001,000
Hungary proper	87,733,000	79,484,000	70,168,000	92,270,000	74,681,000
Croatia-Slavonia	5,541,000	4,174,000	4,253,000	5,607,000	5,445,000
Bosnia-Herzegovnia	3,543,000	2,575,000	3,572,000	4,575,000	4,478,000
Total Austria-Hungary	251,368,000	256,838,000	222,062,000	274,392,000	226,605,000
Belgium	45,228,000	45,937,000	43,058,000	40,000,000	30,000,000
Bulgaria	11,884,000	7,416,000	11,252,000	9,356,000	13,193,000
Denmark	38,726,000	42,529,000	40,437,000	42,170,000	40,663,000
Finland	19,612,000	20,643,000	19,000,000	18,000,000	19,452,000
France	256,913,000	303,889,000	285,837,000	331,183,000	315,133,000
Germany	580,875,000	630,324,000	530,131,000	628,718,000	544,287,000
Italy	30,000,000	30,000,000	30,000,000	43,402,000	28,574,000
Netherlands	19,588,000	20,933,000	19,683,000	19,361,000	20,357,000
Norway	9,297,000	6,946,000	11,315,000	8,804,000	10,488,000
Roumania	26,165,000	17,842,000	17,212,000	25,945,000	29,647,000
Russia:					
Russia proper	514,933,000	729,813,000	743,523,000	960,498,000	--------------
Poland	66,425,000	72,574,000	66,135,000	73,758,000	--------------
Northern Caucasia	21,933,000	19,697,000	24,860,000	33,428,000	--------------
Total Russia (European)	633,291,000	822,084,000	834,518,000	1,067,684,000	966,248,000
Servia	4,642,000	2,984,000	3,057,000	3,445,000	2,205,000
Spain	28,077,000	16,998,000	28,114,000	34,307,000	29,018,000
Sweden	64,550,000	64,597,000	72,773,000	69,292,000	75,238,000
United Kingdom:					
Great Britain—					
England	84,102,000	94,606,000	82,470,000	80,573,000	81,501,000
Scotland	35,108,000	36,193,000	37,920,000	39,097,000	38,194,000
Wales	8,063,000	7,829,000	7,133,000	7,233,000	8,084,000
Ireland	53,111,000	50,850,000	54,032,000	57,467,000	65,770,000
Total United Kingdom	180,384,000	189,478,000	181,555,000	184,370,000	193,549,000
Total	2,200,630,000	2,479,438,000	2,350,004,000	2,800,429,000	2,544,657,000
ASIA.					
Cyprus	359,000	331,000	410,000	400,000	400,000
Russia:					
Central Asia	9,805,000	18,049,000	17,371,000	15,633,000	--------------
Siberia	69,873,000	67,114,000	89,500,000	62,033,000	--------------
Transcaucasia	35,000	13,000	27,000	37,000	--------------
Total Russia (Asiatic)	79,713,000	85,176,000	106,898,000	77,703,000	79,743,000
Total	80,072,000	85,507,000	107,308,000	78,103,000	80,143,000

OATS—Continued

Country	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels	1910 Bushels
AFRICA.					
Algeria	9,379,000	10,651,000	9,600,000	10,673,000	13,258,000
Tunis	2,411,000	3,149,000	1,736,000	5,443,000	5,374,000
Union of South Africa	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000
Total	15,290,000	17,300,000	14,836,000	19,616,000	22,132,000
AUSTRALASIA.					
Australia:					
Queensland	6,000	30,000	10,000	40,000	52,000
New South Wales	911,000	1,449,000	879,000	1,154,000	2,009,000
Victoria	7,460,000	9,124,000	5,365,000	11,475,000	8,163,000
South Australia	897,000	924,000	902,000	1,320,000	1,247,000
Western Australia	293,000	472,000	745,000	765,000	1,287,000
Tasmania	1,238,000	2,042,000	1,574,000	1,900,000	2,422,000
Total Australia	10,805,000	14,041,000	9,475,000	16,654,000	15,180,000
New Zealand	13,108,000	11,555,000	15,495,000	19,503,000	13,953,000
Total Australasia	23,913,000	25,596,000	24,970,000	36,157,000	29,133,000
Grand Total	3,544,961,000	3,591,518,000	3,570,317,000	4,317,233,000	4,146,512,000

BARLEY.

Barley crop of countries named, 1906-1910.

NORTH AMERICA.					
United States	178,916,000	153,597,000	166,756,000	170,284,000	162,227,000
Canada:					
New Brunswick	99,000	97,000	79,000	94,000	73,000
Ontario	25,253,000	21,718,000	21,124,000	20,952,000	20,727,000
Manitoba	17,533,000	16,753,000	17,093,000	20,866,000	13,826,000
Saskatchewan	1,316,000	1,350,000	1,952,000	4,493,000	3,598,000
Alberta	2,158,000	1,083,000	3,881,000	5,999,000	3,953,000
Other	3,000,000	3,341,000	2,633,000	2,994,000	2,971,000
Total Canada	49,359,000	44,342,000	46,762,000	55,398,000	45,148,000
Mexico	7,615,000	7,000,000	7,000,000	7,000,000	7,000,000
Total	235,890,000	204,939,000	220,518,000	232,682,000	214,375,000
EUROPE.					
Austria-Hungary:					
Austria	76,024,000	78,555,000	69,497,000	79,368,000	67,618,000
Hungary proper	69,747,000	63,078,000	56,324,000	71,868,000	55,758,000
Croatia-Slavonia	2,758,000	2,064,000	2,552,000	2,394,000	2,732,000
Bosnia-Herzegovina	3,276,000	2,388,000	2,389,000	3,755,000	3,445,000
Total Austria-Hungary	151,805,000	146,085,000	130,762,000	157,385,000	129,553,000
Belgium	4,349,000	5,129,000	4,409,000	5,000,000	4,000,000
Bulgaria	12,008,000	6,772,000	11,311,000	9,322,000	15,754,000
Denmark	19,975,000	21,616,000	20,166,000	21,509,000	21,713,000
Finland	5,376,000	5,124,000	6,000,000	5,000,000	4,775,000
France	36,538,000	43,043,000	40,673,000	46,144,000	44,532,000
Germany	142,901,000	160,650,000	140,539,000	160,552,000	133,330,000
Italy	8,000,000	8,000,000	9,000,000	10,951,000	9,483,000
Netherlands	3,260,000	4,091,000	3,953,000	3,332,000	3,383,000
Norway	3,262,000	2,597,000	3,028,000	2,596,000	2,900,000
Roumania	33,539,000	20,062,000	12,873,000	19,955,000	29,359,000

BARLEY—Continued

Country	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels	1910 Bushels
Russia:					
Russia proper	243,619,000	277,500,000	297,449,000	362,163,000	----------
Poland	23,351,000	25,395,000	23,790,000	26,671,000	----------
Northern Caucasia	37,306,000	41,206,000	46,219,000	55,900,000	----------
Total Russia (European) *a*	304,276,000	344,101,000	367,458,000	464,734,000	448,832,000
Servia	4,848,000	3,137,000	3,351,000	3,123,000	2,067,000
Spain	90,264,000	53,598,000	69,596,000	81,579,000	76,308,000
Sweden	14,328,000	12,811,000	15,520,000	13,900,000	14,763,000
United Kingdom:					
Great Britain—					
England	51,543,000	51,926,000	46,353,000	52,323,000	50,245,000
Scotland	7,803,000	7,466,000	7,410,000	7,731,000	6,854,000
Wales	3,116,000	2,881,000	2,682,000	2,804,000	2,937,000
Ireland	7,144,000	6,934,000	7,064,000	8,258,000	6,846,000
Total United Kingdom	69,606,000	69,207,000	63,509,000	71,116,000	66,882,000
Total	904,335,000	906,023,000	902,148,000	1,076,288,000	1,007,634,000
ASIA.					
Cyprus	2,778,000	2,963,000	2,420,000	2,500,000	2,500,000
Japanese Empire:					
Japan	83,968,000	90,544,000	87,138,000	87,167,000	88,000,000
Formosa	49,000	50,000	50,000	50,000	50,000
Total Japanese Empire	84,017,000	90,594,000	87,188,000	87,217,000	88,050,000
Russia:					
Central Asia	2,613,000	4,385,000	4,266,000	4,099,000	----------
Siberia	5,136,000	4,957,000	6,103,000	4,775,000	----------
Transcaucasia	13,000	4,000	13,000	10,000	----------
Total Russia (Asiatic)	7,762,000	9,346,000	10,382,000	8,884,000	10,160,000
Total	94,557,000	102,903,000	99,990,000	98,601,000	100,710,000
AFRICA.					
Algeria	47,600,000	41,543,000	31,511,000	50,008,000	48,708,000
Sudan (Anglo-Egyptian)	334,000	300,000	300,000	300,000	300,000
Tunis	7,863,000	9,506,000	5,057,000	9,186,000	6,660,000
Union of South Africa	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Total	58,797,000	54,349,000	39,868,000	62,494,000	58,668,000
AUSTRALASIA.					
Australia:					
Queensland	64,000	163,000	67,000	142,000	200,000
New South Wales	115,000	158,000	77,000	172,000	281,000
Victoria	1,095,000	1,295,000	1,093,000	1,716,000	1,056,000
South Australia	522,000	507,000	585,000	852,000	713,000
Western Australia	51,000	50,000	79,000	77,000	105,000
Tasmania	97,000	146,000	154,000	190,000	158,000
Total Australia	1,944,000	2,319,000	2,055,000	3,139,000	2,513,000
New Zealand	1,056,000	1,068,000	1,200,000	2,000,000	1,345,000
Total Australasia	3,000,000	3,387,000	3,255,000	5,139,000	3,858,000
Grand total	1,296,579,000	1,271,601,000	1,265,799,000	1,475,204,000	1,385,245,000

a Exclusive of winter barley.

c RYE.

Rye crop of countries named, 1906-1910.

Country	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels	1910 Bushels
NORTH AMERICA.					
United States	33,375,000	31,566,000	31,851,000	32,239,000	33,039,000
Canada:					
Ontario	1,327,000	1,039,000	1,030,000	1,097,000	923,000
Manitoba	101,000	84,000	101,000	75,000	93,000
Other	500,000	371,000	580,000	543,000	528,000
Total Canada	1,928,000	1,494,000	1,711,000	1,715,000	1,544,000
Mexico	70,000	70,000	70,000	70,000	70,000
Total	35,373,000	33,130,000	33,632,000	34,024,000	34,653,000
EUROPE.					
Austria-Hungary:					
Austria	99,246,000	86,452,000	113,309,000	114,433,000	108,939,000
Hungary proper	51,962,000	39,445,000	45,185,000	44,858,000	54,721,000
Croatia-Slavonia	1,918,000	2,136,000	2,520,000	2,393,000	2,318,000
Bosnia-Herzegovina	388,000	271,000	298,000	368,000	394,000
Total Austria-Hungary	153,514,000	128,304,000	161,312,000	162,052,000	166,372,000
Belgium	20,569,000	23,484,000	22,199,000	22,000,000	21,000,000
Bulgaria	7,538,000	3,883,000	5,604,000	6,906,000	11,724,000
Denmark	18,828,000	15,893,000	19,170,000	18,922,000	19,740,000
Finland	11,927,000	11,032,000	12,000,000	11,000,000	8,982,000
France	50,429,000	55,896,000	51,703,000	54,934,000	48,212,000
Germany	378,948,000	384,150,000	422,692,000	446,767,000	413,802,000
Italy	5,000,000	5,000,000	5,000,000	5,032,000	5,439,000
Netherlands	13,938,000	14,483,000	15,866,000	17,652,000	14,817,000
Norway	963,000	823,000	869,000	1,011,000	896,000
Roumania	8,900,000	2,554,000	2,640,000	3,090,000	7,885,000
Russia:					
Russia proper	555,698,000	693,257,000	673,736,000	783,055,000	------------
Poland	74,100,000	74,127,000	77,954,000	86,775,000	------------
Northern Caucasia	8,877,000	6,807,000	6,993,000	7,335,000	------------
Total Russia (European)	638,675,000	774,191,000	758,683,000	877,165,000	843,699,000
Servia	1,560,000	911,000	974,000	1,024,000	768,000
Spain	30,918,000	27,027,000	26,412,000	34,901,000	27,596,000
Sweden	25,915,000	22,001,000	26,052,000	25,728,000	24,154,000
United Kingdom	2,073,000	1,895,000	1,776,000	1,954,000	2,000,000
Total	1,369,695,000	1,471,527,000	1,532,952,000	1,690,138,000	1,617,086,000
ASIA.					
Russia:					
Central Asia	404,000	993,000	564,000	1,498,000	------------
Siberia	27,752,000	32,931,000	22,775,000	18,152,000	------------
Transcaucasia	13,000	12,000	9,000	18,000	------------
Total Russia (Asiatic)	28,169,000	33,936,000	23,348,000	19,668,000	23,927,000
AUSTRALASIA.					
Australia:					
Queensland	1,000	3,000	1,000	1,000	3,000
New South Wales	50,000	98,000	56,000	51,000	66,000
Victoria	30,000	21,000	22,000	33,000	35,000
Western Australia	4,000	5,000	5,000	4,000	10,000
Tasmania	8,000	15,000	15,000	18,000	18,000
Total Australia	158,000	185,000	172,000	201,000	232,000
Grand total	1,433,395,000	1,538,778,000	1,590,104,000	1,744,031,000	1,675,898,000

POTATOES.

Potato crop of countries named, 1905-1909.

(No statistics for Portugal, Egypt and some other less important potato-growing countries.)

Country	1905 Bushels	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels
NORTH AMERICA.					
United States (contiguous)	260,741,000	308,038,000	298,262,000	278,985,000	376,537,000
Canada:					
Prince Edward Island	(*a*)	(*a*	5,453,000	7,327,000	6,761,000
Nova Scotia	(*a*)	(*a*)	8,294,000	7,884,000	9,098,000
New Brunswick	5,693,000	5,522,000	5,183,000	11,203,000	12,247,000
Quebec	(*a*)	(*a*)	22,911,000	16,680,000	30,853,000
Ontario	14,819,000	15,494,000	20,908,000	23,096,000	29,465,000
Manitoba	2,901,000	4,281,000	4,150,000	3,807,000	4,118,000
Saskatchewan			2,706,000	1,826,000	3,944,000
Alberta	2,844,000	5,507,000	2,632,000	1,967,000	2,599,000
Other	*b* 29,000,000	*b* 29,000,000			
Total Canada	55,257,000	59,804,000	72,237,000	73,790,000	99,085,000
Mexico	469,000	924,000	*c* 921,000	*c* 924,000	*c* 924,000
Newfoundland *b*	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000
Total	317,817,000	370,116,000	372,773,000	355,049,000	477,896,000
SOUTH AMERICA.					
Argentina	*d* 10,000,000	*d* 10,000,000	*d* 10,000,000	*d* 10,000,000	*d* 10,000,000
Chile	6,532,000	*f* 6,532,000	*f* 6,532,000	8,063,000	6,404,000
Total	16,532,000	16,532,000	16,532,000	18,063,000	16,404,000
EUROPE.					
Austria-Hungary:					
Austria	581,822,000	514,289,000	538,789,000	475,860,000	479,616,000
Hungary proper	168,225,000	179,083,000	178,168,000	139,469,000	183,521,000
Croatia-Slavonia	12,589,000	12,854,000	25,625,000	21,129,000	*g* 21,129,000
Bosnia-Herzegovina	2,485,000	2,328,000	2,949,000	*g* 2,949,000	*h* 2,949,000
Total Austria-Hungary	765,121,000	708,554,000	745,531,000	639,407,000	687,215,000
Belgium	57,159,000	88,652,000	88,192,000	82,846,000	*g* 82,846,000
Bulgaria	300,000	364,000	300,000	340,000	323,000
Denmark	29,951,000	28,454,000	24,005,000	29,752,000	24,326,000
Finland	20,704,000	20,432,000	18,765,000	*g* 18,765,000	*h* 18,765,000
France	523,876,000	372,076,000	512,229,000	625,021,000	613,041,000
Germany	1,775,579,000	1,577,653,000	1,673,246,000	1,702,803,000	1,716,143,000
Greece	*i* 550,000	*i* 550,000	*i* 550,000	*i* 550,000	*j* 550,000
Italy	*k* 60,000,000	*k* 60,000,000	*k* 60,000,000	*k* 60,000,000	63,273,000
Luxemburg	6,400,000	6,491,000	7,295,000	5,878,000	6,099,000
Malta	387,000	378,000	793,000	692,000	372,000
Netherlands	87,043,000	95,503,000	94,401,000	96,695,000	97,275,000
Norway	25,832,000	20,995,000	16,956,000	28,030,000	22,084,000
Roumania	3,733,000	4,636,000	3,860,000	4,310,000	3,813,000

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a Included in "other."
b Estimated from returns of census year, 1900.
c Data for 1906.
d Data for 1908.
e Census shows 19,000 hectares (46,949 acres) yielding 15,000 kilograms per hectare (223 bushels per acre).
f Data for 1905.
g Year preceding.
h Data for 1907.
i Data for 1909.
j Unofficial estimate.
k Average production as unofficially estimated.

POTATOES—Continued

Country	1906 Bushels	1907 Bushels	1908 Bushels	1909 Bushels	1910 Bushels
EUROPE—Cont.					
Russia:					
Russia proper	686,502,000	630,211,000	694,487,000	682,454,000	764,943,000
Poland	331,529,000	296,662,000	327,689,000	366,433,000	396,023,000
Northern Caucasia	14,857,000	12,844,000	11,932,000	11,248,000	12,520,000
Total Russia (European)	1,032,888,000	939,717,000	1,034,108,000	1,060,135,000	1,173,486,000
Servia	1,232,000	1,709,000	876,000	645,000	645,000
Spain	*a* 84,000,000	*a* 84,000,000	*a* 84,000,000	84,000,000	91,014,000
Sweden	74,819,000	63,829,000	57,823,000	78,000,000	61,981,000
Switzerland	*b* 47,000,000	*b* 47,000,000	*b* 47,000,000	49,971,000	44,092,000
United Kingdom:					
Great Britain	140,474,000	128,005,000	111,159,000	146,258,000	137,237,000
Ireland	127,793,000	99,328,000	83,869,000	119,455,000	119,572,000
Total Great Britain and Ireland	268,267,000	277,333,000	195,028,000	265,713,000	256,809,000
Total	4,864,844,000	4,348,416,000	4,664,958,000	4,833,573,000	4,964,152,006
ASIA.					
Japan	16,255,000	18,691,000	20,310,000	21,174,000	*a* 21,174,000
Russia (Asiatic)	18,865,000	16,481,000	17,076,000	22,588,000	18,753,000
Total	35,120,000	35,172,000	37,386,000	43,762,000	39,927,000
AFRICA.					
Algeria	1,605,000	1,684,000	1,803,000	1,549,000	1,679,000
Union of South Africa:					
Cape of Good Hope	*c* 1,500,000	*c* 1,500,000	*c* 1,500,000	1,304,000	*d* 1,304,000
Natal	466,000	454,000	444,000	405,000	392,000
Transvaal	*e* 618,000	*e* 618,000	549,000	519,000	410,000
Total Union of South Africa	2,584,000	2,572,000	2,493,000	2,228,000	2,106,000
Total	4,189,000	4,256,000	4,296,000	3,777,000	3,785,000
AUSTRALASIA.					
Australia:					
Queensland	718,000	422,000	591,000	492,000	431,000
New South Wales	1,820,000	1,881,000	4,288,000	2,086,000	2,680,000
Victoria	3,467,000	4,307,000	6,229,000	5,044,000	5,706,000
South Australia	729,000	756,000	832,000	756,000	805,000
Western Australia	210,000	235,000	188,000	212,000	250,000
Tasmania	4,127,000	2,412,000	6,807,000	5,431,000	4,540,000
Total Australia	11,071,000	10,013,000	18,935,000	14,021,000	14,412,000
New Zealand	5,025,000	4,607,000	6,342,000	5,339,000	7,288,000
Total Australasia	16,096,000	14,620,000	25,277,000	19,360,000	21,700,000
Grand total	5,254,598,000	4,789,112,000	5,121,222,000	5,273,584,000	5,523,864,000

a Average production as unofficially estimated.
b Average 1908-1909.
c Unofficial estimate.
d Year preceding.
e Data for 1904.

PART III

Crop and Other Farm Statistics for the Year Ending December 31, 1910

The following tables are the second compilation of Crop and Other Farm Statistics gathered under the provisions of Chapter 86, Acts of the Thirty-third General Assembly.

The reports from the County Auditors of Crop and Other Farm Statistics for the year 1910 were made more promptly, and showed evidence of more care in making them out, than for the year 1909 but revealed the fact that still more care should be exercised in checking the township assessors' reports. Where errors were apparent in these reports they were returned to the county auditor and rectified in nearly every instance. The correspondence with the various county auditors shows conclusively that the greater portion of the mistakes in these reports are chargeable to the work of the township assessor.

In a number of counties the report of the auditor to this department was delayed one, two, and three weeks by reason of one or two of the township assessors, residing in a remote part of the county, failing to file their report until six weeks after the time specified by law. If the law is not perfectly clear, and does not make it mandatory on the part of the township assessors to collect and file accurate reports of Crop and Other Farm Statistics by the date specified, it is the opinion of this department that the law should be so amended as to leave no room for doubt or discretion on their part as to the manner of collecting and the time for filing their reports.

We wish to reiterate the recommendation made in the Tenth Annual Year Book that some provision be made for the publication and distribution of the statistics gathered under this act other than the annual Iowa Year Book of Agriculture. As there are only a limited number of year books for distribution it would seem advisable to authorize the printing and distribution of at least

25,000 bulletins containing these statistics immediately following the compilation of same. This would not only give a great amount of authentic information and publicity in regard to Iowa's products and source of wealth but would greatly facilitate publishing the Year Book.

Under present arrangements it is necessary to hold the copy for the Year Book at least three months in order to include these statistics in the issue of the same year.

The statistics for 1910 have been tabulated and are presented in the five tables as follows:

Table No. 1. Sets forth the total number of farms occupied by tenant or owner of five acres or more of land, either inside or outside the corporate limits of cities and towns. It will be noticed that the number of farms reported this year are not as great as reported last year, or as shown by government reports. This difference is due to the consolidation of farms that has taken place in Iowa during the past few years, and to the fact that statistics were not taken on farms of less than five acres.

The average size of farms was arrived at by taking the total acreage of farms and dividing it by the total number of farms reported occupied by either tenant or owner.

Total acreage of all farms within the state consisting of five acres or more.

Total acreage occupied by farm buildings includes all land occupied by buildings, feed lots, and grove surrounding same, but does not include timber land used for pasture.

Total acreage in pasture, orchard, garden and in crops not otherwise enumerated. Number of silos in use on Iowa farms and average monthly wage paid farm help during summer and winter months.

Table No. 2. Shows the total acreage, average yield per acre, and total yield for state by counties for the following principal farm crops for the year 1910: Corn, oats, barley, winter and spring wheat. By comparing the total acreage and total yield reported in this table with totals under tables compiled by the Iowa Weather and Crop Service on page ——, a variation will be noted. The acreage and yield reported in the tables compiled by this department are made up from reports from each township assessor in the state and should be more accurate than the figures compiled from estimates from seven or eight hundred crop reporters, from which is made up the estimate by the Weather and Crop Service.

Table No. 3. Shows the acreage, yield per acre, and total yield by counties of: Rye, tame hay, wild hay, alfalfa, potatoes, and flax seed for the year 1910.

Table No. 4. Shows number of horses all ages, mules all ages, and cows all ages. Number cattle sold for slaughter and average number of cows milked. Number swine on farms July 1, 1910. Number sheep kept on farm, number shipped in for feeding and number sold for slaughter. Pounds of wool sold. Total number all varieties of poultry on farm July 1, 1910, and total number dozen eggs received by counties for the year 1910.

Table No. 5. Shows acreage in sweet corn, pop corn, and acreage and total yield of timothy and clover seed by counties for the year 1910.

TABLE No. 1

Total number, average size and total acreage of farms. Total acreage occupied by farm buildings, acreage in pasture, orchard garden and crops not otherwise enumerated. Number silos on farm and average monthly wage paid farm help, summer and winter months, by counties, for the year, 1910.

nties	Number of farms	Average size of farm	Total acreage of farms	Number of acres occupied by farm buildings	Acreage in pasture	Acreage in orchard	Acreage in garden	Acreage in crops not otherwise enumerated	Number silos on farm	Average monthly wage paid farm help, summer months	Average monthly wage paid farm help, winter months
Adair	2,011	162	325,689	6,784	114,908	1,885	202	20	3	$ 28.02	$ 22.92
Adams	1,613	149	240,438	5,051	101,152	2,021	43	683	19	31.38	26.20
Allamakee	1,955	174	340,825	4,682	148,701	781	367	979	27	22.95	----------
Appanoose	1,517	140	211,727	11,471	83,252	1,103	204	49	27	32.37	36.08
Audubon	1,575	160	252,441	6,389	71,482	1,051	147	2,062	43	28.85	21.36
Benton	2,264	174	394,246	8,822	105,002	888	314	6,011	57	30.16	20.00
Black Hawk	1,913	163	311,999	6,829	107,120	1,120	529	1,054	139	28.46	18.04
Boone	2,381	120	285,614	7,362	54,733	1,248	190	405	25	27.46	16.32
Buchanan	1,940	155	300,967	6,905	87,725	435	261	196	27	25.75	20.93
Bremer	1,687	139	234,469	6,029	68,259	279	111	2,369	41	27.07	21.13
Buena Vista	1,775	182	311,694	8,810	67,433	801	174	885	25	31.17	21.22
Butler	1,931	169	327,181	7,548	89,650	623	220	200	37	28.22	17.77
Calhoun	1,778	181	320,894	6,993	59,246	841	298	341	6	18.28	12.66
Carroll	1,808	187	337,687	8,004	69,783	777	202	184	8	28.13	20.43
Cass	2,037	161	328,763	7,727	10,402	2,266	320	1,237	8	27.77	21.34
Cedar	1,845	157	289,930	6,239	83,625	1,054	137	10	11	28.02	19.47
Cerro Gordo	1,552	184	286,092	8,945	63,566	871	410	1,803	50	27.55	23.61
Cherokee	1,712	196	336,066	9,416	78,674	542	160	282	6	31.54	21.10
Chickasaw	1,750	157	275,030	5,574	79,806	314	378	306	24	26.58	17.40
Clarke	1,200	159	191,151	2,754	86,131	1,182	246	299	12	26.47	28.12
Clay	1,462	212	309,274	7,870	77,616	220	67	10.207	18	32.00	21.00
Clayton	2,705	148	399,531	5,213	166,942	1,623	545	373	87	27.35	22.15
Clinton	2,468	158	390,849	7,906	147,106	535	377	310	26	27.50	18.05
Crawford	2,220	183	405,995	8,570	116,848	1,018	141	307	9	30.75	20.90
Dallas	2,049	154	314,772	6,526	87,779	2,588	294	115	33	28.71	24.68
Davis	1,956	163	319,203	4,926	161,441	1,981	337	664	50	21.52	21.52
Decatur	1,963	139	272,519	5,669	109,262	2,594	305	1,419	20	24.23	24.58
Delaware	1,941	160	310,556	5,722	108,799	514	466	664	95	27.74	22.72

Des Moines	1,631	131	214,397	3,307	76,251	2,190	607	615	16	27.33	22.46
Dickinson	945	237	223,589	4,665	53,514	563	149	1,019	2	29.30	24.41
Dubuque	2,010	162	325,551	5,285	128,450	981	710	25	6	29.58	18.53
Emmet	872	218	189,674	3,905	46,852	380	87	713	14	28.67	23.43
Fayette	2,841	142	403,966	9,282	135,260	744	520	3,372	122	27.36	21.10
Floyd	1,693	162	273,837	6,014	62,745	388	175	217	13	28.69	22.39
Franklin	1,724	184	317,377	7,793	80,209	403	125	83	18	26.38	18.75
Fremont	1,642	156	256,500	4,102	66,436	3,025	210	738	3	31.07	29.67
Greene	1,906	171	326,199	7,243	75,855	1,223	278	89	3	30.40	21.47
Grundy	1,600	188	301,136	9,116	73,025	443	91	13	16	24.11	
Guthrie	1,874	161	302,447	6,725	109,391	2,112	200	65	25	28.72	
Hamilton	2,031	163	330,229	8,315	75,823	416	120	1,036	20	28.91	20.84
Hancock	1,446	200	307,538	6,584	60,368	323	205	1,187	58	29.27	17.58
Hardin	1,806	169	304,779	7,319	78,541	692	280	322	20	32.44	23.45
Harrison	2,325	148	343,875	7,962	87,249	2,098	446	1,349	5	22.10	18.03
Henry	1,707	136	231,488	4,576	80,426	1,600	305	65	24	28.59	26.82
Howard	1,343	165	221,440	5,161	61,170	147	203	1,440	26	25.63	17.33
Humboldt	1,289	187	241,126	6,478	52,052	588	170	1,167	18	29.87	18.35
Ida	1,533	169	259,216	6,312	61,384	755	101	271	9	35.39	
Iowa	2,018	161	324,152	7,555	111,705	2,410	565	1,419	93	28.09	20.47
Jackson	1,916	173	332,299	4,296	139,064	830	336	570	8	27.29	18.87
Jasper	2,789	145	404,473	8,851	140,321	2,093	377	16	25	27.55	24.51
Jefferson	1,697	132	223,727	4,411	89,953	1,586	183	62	10	27.96	27.86
Johnson	2,233	136	303,192	5,837	100,098	1,587	712	13,574	49	32.25	28.28
Jones	1,859	164	304,145	6,210	116,212	632	228	377	40	25.55	19.38
Keokuk	2,333	138	321,151	5,877	108,163	2,453	530	201	15	27.16	22.44
Kossuth	2,419	210	507,614	1,741	117,308	844	363	2,978	30	26.79	18.48
Lee	1,498	154	231,032	4,035	96,608	2,067	342	381	6	25.89	23.55
Linn	2,670	132	351,510	7,959	121,226	1,149	582	1,962	76	26.97	22.31
Lucas	1,420	158	224,681	4,594	89,524	1,175	104		40	25.77	24.67
Louisa	1,210	157	189,417	3,630	60,150	1,225	181	1,739	9	29.09	23.33
Lyon	1,419	218	315,249	8,018	60,030	150	80	212	17	30.88	24.46
Madison	2,002	148	297,074	6,004	102,716	1,918	267	471	8	26.99	25.30
Mahaska	1,910	143	272,747	4,484	74,875	1,907	103	161	1	26.33	24.59
Marion	2,214	140	311,016	8,298	117,292	3,654	993	1,090	14	27.23	24.25
Marshall	2,022	160	323,114	9,073	94,572	1,289	356	156	37	29.05	23.13
Mills	1,230	171	209,830	4,465	58,954	3,014	152	760		30.60	28.48
Mitchell	1,478	173	256,129	7,126	61,855	254	109	910	17	30.25	17.84
Monona	1,907	175	333,967	6,250	86,327	1,319	253	4,743	1	29.15	26.04
Monroe	1,361	142	193,426	3,373	104,816	1,264	69		20	25.50	22.60
Montgomery	1,639	146	238,926	4,504	73,501	2,388	269	202	18	30.31	27.34
Muscatine	1,562	144	225,654	4,646	77,066	1,206	1,705	483	68	28.26	24.88
O'Brien	1,609	192	309,267	8,798	72,823	240	85	455	11	29.47	18.00
Osceola	959	219	209,946	4,325	38,030	169	66	586		28.82	
Page	1,942	146	284,060	6,723	89,042	2,872	116	1,163	9	30.09	26.74
Palo Alto	1,390	197	273,586	7,172	65,795	487	209	1,366	9	27.15	21.50
Plymouth	2,477	195	483,141	15,754	94,818	410	505	2,593		28.48	19.52
Pocahontas	1,736	184	318,796	7,743	67,684	656	175	4,503	12	30.44	27.25

TABLE No. 1—CONTINUED

Counties	Number of farms	Average size of farm	Total acreage of farms	Number of acres occupied by farm buildings	Acreage in pasture	Acreage in orchard	Acreage in garden	Acreage in crops not otherwise enumerated	Number silos on farms	Average monthly wage paid farm help, summer months	Average monthly wage paid farm help, winter months
Polk	2,311	133	293,049	4,674	81,340	3,122	465	1,016	128	29.31	22.75
Pottawattamie	3,050	156	476,313	11,403	130,777	4,164	1,093	9,083	7	30.00	23.00
Poweshiek	2,597	124	321,757	7,353	90,726	1,616	247	70	68	28.68	25.00
Ringgold	1,886	154	290,208	6,156	118,529	1,967	229	482	16	24.88	23.62
Sac	1,799	186	333,758	9,250	77,844	1,091	225	53	13	30.37	20.80
Scott	2,110	125	264,964	5,332	76,935	1,611	820	2,644	79	30.00	18.95
Shelby	1,981	171	339,563	7,242	86,693	1,432	344	217	9	29.24	21.44
Sioux	2,379	183	435,758	10,101	84,647	192	126	185	39	27.57	16.04
Story	2,019	154	311,850	7,532	73,176	1,147	190	291	56	30.15	22.87
Tama	2,338	168	393,462	7,926	125,104	1,163	376	36	60	30.05	20.60
Taylor	1,784	152	272,156	5,471	102,401	2,574	186	353	12	26.73	25.39
Union	1,431	160	229,349	4,252	88,915	1,887	260	278	9	27.29	26.52
Van Buren	1,828	149	272,533	4,782	123,966	2,359	503	869	37	26.36	22.10
Wapello	1,716	124	212,450	4,108	78,471	2,254	302	657	21	26.06	24.43
Warren	2,160	132	285,775	6,267	116,295	2,348	358	263	32	27.18	25.80
Washington	2,056	149	305,887	6,225	96,493	1,921	263	330	24	27.43	27.02
Wayne	1,642	165	270,370	5,527	104,748	1,216	223	324	19	24.40	20.15
Webster	2,287	169	386,885	7,382	94,950	957	382	192	27	27.55	22.86
Winnebago	1,336	167	223,130	6,097	55,933	372	56	811	31	24.75	18.80
Winneshiek	2,559	146	373,346	7,696	133,198	754	411	387	33	26.29	16.42
Woodbury	2,260	186	419,261	9,186	98,272	1,254	258	787	1	30.54	23.22
Worth	1,262	180	227,007	7,051	56,670	483	59	401	14	27.57	18.16
Wright	1,740	187	324,560	7,908	75,959	617	82	1,819	18	32.88	20.41
Total	184,726	161.5	29,826,678	655,547	8,893,014	127,975	29,903	111,900	2,750	$ 28.15	$ 21.13

TABLE No. 2

Acreage; yield per acre and total yield of; corn, oats, barley, winter wheat, and spring wheat, by counties for the year 1910.

Counties	Corn			Oats			Winter Wheat			Spring Wheat			Barley		
	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels
Adair	93,500	44	4,126,426	33,206	36	1,203,808	121	22	2,721	3,300	19	63,147	2,234	29	64,479
Adams	69,859	42	2,979,369	23,345	34	770,691	1,652	15	25,601	1,203	16	19,789	1,065	22	23,360
Allamakee	37,672	36	1,354,034	34,777	30	1,050,452	539	23	12,624	2,280	15	35,280	12,674	26	333,000
Appanoose	38,372	32	1,218,487	14,259	25	351,712	2,224	11	24,494	228	12	2,404	24	18	426
Audubon	82,177	43	3,566,268	34,550	35	1,221,100	114	26	2,913	4,704	21	90,328	4,914	25	124,449
Benton	118,904	36	4,259,956	77,874	38	2,963,849	120	25	3,016	1,277	22	28,379	6,144	32	196,715
Black Hawk	89,424	36	3,193,794	54,237	36	1,975,381	513	22	11,199	347	19	6,735	2,818	32	90,549
Boone	96,824	45	4,388,603	66,481	34	2,263,122	192	21	3,960	1,329	21	27,846	288	29	8,229
Bremer	55,148	27	1,465,569	51,199	29	1,483,376	32	25	784	654	19	12,532	3,227	21	68,512
Buchanan	78,352	31	2,442,730	50,958	35	1,856,928	478	21	9,966	915	23	20,933	2,601	31	81,152
Buena Vista	96,370	43	4,154,253	74,672	42	3,152,911	70	27	1,877	494	22	10,939	674	30	20,222
Butler	94,064	35	3,249,229	71,440	33	2,389,624	110	20	2,184	410	20	8,357	1,364	26	35,973
Calhoun	114,068	44	4,970,492	91,780	35	3,244,063	58	22	1,290	260	21	6,072	655	28	18,430
Carroll	109,004	41	4,489,150	61,312	38	2,308,367	43	29	1,230	6,471	18	115,395	3,200	26	82,253
Cass	104,790	43	4,480,337	36,176	34	1,224,723	2,738	19	51,413	10,825	19	200,414	2,058	25	51,804
Cedar	95,772	39	3,738,907	36,102	39	1,426,838	3,193	21	67,607	2,322	22	50,420	8,767	27	233,339
Cerro Gordo	89,580	35	3,165,596	67,470	31	2,092,767	219	20	4,277	768	20	15,523	1,981	25	50,202
Cherokee	106,903	45	4,776,405	76,675	45	3,438,015	44	24	1,045	1,057	24	25,142	2,632	34	88,730
Chickasaw	58,839	20	1,201,979	58,531	25	1,440,535	59	17	1,019	2,014	17	34,280	4,005	21	82,436
Clarke	45,382	32	1,442,810	17,683	28	503,145	630	13	8,363	110	14	1,538	238	19	4,578
Clay	82,361	40	3,266,636	69,821	42	2,961,186	48	29	1,376	842	22	18,499	769	31	24,049
Clayton	68,245	38	2,626,554	57,683	49	2,853,056	727	17	12,646	1,561	22	34,055	13,933	27	375,788
Clinton	108,494	38	4,106,850	41,830	35	1,555,528	2,886	26	73,953	2,621	22	58,770	5,708	28	162,098
Crawford	130,897	43	5,650,642	59,307	30	1,808,112	968	20	19,061	14,756	18	264,076	5,313	23	120,682
Dallas	111,859	41	4,586,807	49,935	40	1,909,956	1,422	22	31,292	2,095	22	46,973	418	25	10,647
Davis	49,895	40	1,977,038	20,145	32	635,481	4,444	14	58,130	101	17	1,764	14	28	397
Decatur	64,462	39	2,308,583	23,473	28	656,561	3,272	14	44,552	56	15	838	25	28	703
Delaware	76,351	30	2,294,893	43,321	33	1,437,274	80	30	2,430	451	22	10,118	10,249	28	291,322
Des Moines	59,457	49	2,893,063	24,979	33	823,071	8,660	17	147,978	308	18	5,490	757	29	21,807
Dickinson	61,336	32	1,980,838	46,120	37	1,711,345	80	27	2,134	1,942	25	47,700	1,973	28	55,318

TABLE No. 2—CONTINUED

Counties	Corn			Oats			Winter Wheat			Spring Wheat			Barley		
	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels
Dubuque	61,559	31	1,882,638	47,485	33	1,579,879	287	23	6,581	1,021	22	21,978	4,181	27	114,376
Emmet	42,373	37	1,588,706	38,339	42	1,608,615	8	18	144	1,097	25	27,351	1,180	33	38,382
Fayette	83,391	30	2,478,531	66,370	30	2,002,896	252	21	5,295	1,292	20	24,860	8,771	27	235,556
Floyd	71,702	26	1,844,544	69,873	27	1,863,561	155	21	3,214	1,107	19	20,776	1,873	21	39,655
Franklin	86,303	39	3,341,165	71,546	36	2,505,507	141	19	2,672	1,049	22	23,174	1,547	28	43,514
Fremont	115,405	33	3,832,178	13,989	34	469,782	4,970	20	97,316	3,952	17	68,523	109	18	2,010
Greene	118,795	42	5,035,497	61,513	39	2,405,733	14	20	283	531	22	11,676	653	31	20,195
Grundy	92,141	46	4,217,586	71,725	40	2,843,782	257	24	6,210	690	24	16,729	3,291	33	108,551
Guthrie	89,589	39	3,483,606	42,707	34	1,447,285	560	19	10,698	2,853	19	53,252	1,123	26	28,666
Hamilton	105,653	47	5,006,196	73,348	43	3,124,781	899	22	19,943	1,097	21	23,019	227	20	4,630
Hancock	85,111	29	2,436,562	66,494	34	2,271,271	86	19	1,655	3,860	18	67,608	2,886	24	71,336
Hardin	92,450	47	4,344,005	70,172	33	2,344,540	560	24	13,411	2,199	21	45,579	836	35	29,369
Harrison	133,055	36	4,789,780	23,453	25	580,392	6,273	18	114,555	21,842	14	314,588	1,419	24	34,461
Henry	66,313	48	3,207,808	28,936	34	980,244	3,290	16	53,285	151	14	2,107	88	24	2,107
Howard	41,356	23	963,691	45,388	23	1,030,204	57	25	1,445	1,471	17	24,941	8,586	19	164,843
Humboldt	69,161	45	3,090,299	55,446	43	2,379,269	109	24	2,606	2,949	25	72,774	380	32	12,197
Ida	89,234	46	4,101,371	48,968	42	2,063,953	40	18	732	2,386	22	52,038	7,424	31	231,310
Iowa	88,039	45	3,989,673	39,207	38	1,501,963	589	23	13,395	2,669	22	59,766	930	29	27,154
Jackson	58,242	28	1,648,406	28,225	28	781,871	728	19	14,072	1,732	18	31,249	3,543	23	82,791
Jasper	126,785	45	5,683,820	53,308	39	2,102,048	2,186	20	44,184	8,017	16	125,911	667	30	20,299
Jefferson	55,970	43	2,385,770	24,148	34	817,172	4,965	17	82,520	810	15	11,765	394	27	10,532
Johnson	81,468	46	3,717,715	40,646	38	1,553,152	2,877	23	66,360	2,299	22	50,327	1,453	31	45,462
Jones	74,704	32	2,377,616	30,723	38	1,176,232	720	22	16,197	628	24	15,003	6,248	31	195,253
Keokuk	87,005	44	3,851,332	35,198	36	1,256,171	2,185	21	46,680	3,646	21	75,660	1,536	26	40,057
Kossuth	125,494	36	4,566,243	111,077	39	4,356,169	69	24	1,685	4,270	23	98,807	2,304	26	60,235
Lee	46,374	39	1,829,784	17,638	32	559,016	12,794	13	167,168	78	12	969	128	27	3,401
Linn	92,823	32	2,946,459	51,596	38	1,962,212	337	24	8,231	2,217	22	48,253	1,790	31	54,984
Louisa	58,600	51	2,993,546	20,035	31	711,435	11,320	13	144,655	1,223	18	23,120	266	25	6,624
Lucas	46,589	28	1,320,675	18,272	31	573,200	2,306	15	33,759	750	15	11,459	2,764	27	74,765
Lyon	98,883	37	3,656,551	89,515	39	3,453,688	98	25	2,430	1,483	22	33,192	15,150	27	402,758
Madison	80,013	41	3,247,830	23,132	40	926,060	1,159	20	22,748	1,757	27	47,926	1,955	29	56,869
Mahaska	67,962	42	2,860,990	25,065	36	907,301	1,576	18	27,650	2,897	19	55,346	1,116	26	29,518
Marion	90,663	40	3,590,228	25,980	34	886,572	4,735	18	83,155	6,724	18	118,083	3,338	21	69,178

Marshall	106,003	45	4,778,116	63,468	40	2,561,979	2,729	25	68,109	2,482	22	55,644	814	23	19,039
Mills	75,385	41	3,120,295	17,747	25	446,528	2,294	20	46,037	5,172	18	92,057	564	26	14,833
Mitchell	54,446	27	1,455,030	76,600	28	2,171,928	60	21	1,253	2,105	17	34,853	4,450	21	95,220
Monona	124,970	38	4,791,673	25,242	28	708,525	15,475	21	328,379	14,772	17	247,979	2,643	21	55,578
Monroe	34,063	35	1,179,590	9,058	30	268,218	2,782	16	41,018	2,918	17	48,634	69	28	1,920
Montgomery	85,881	47	3,994,641	16,355	36	588,566	5,904	21	124,344	11,377	18	206,638	698	26	18,066
Muscatine	65,775	46	3,009,481	20,282	38	767,362	5,810	21	120,068	1,945	18	35,534	5,108	24	124,500
O'Brien	90,289	46	4,198,226	73,829	46	3,404,382	28	23	640	1,121	23	26,213	11,723	21	249,829
Osceola	55,956	39	2,179,410	62,929	40	2,516,319	7	19	130	206	24	6,984	5,748	29	166,003
Page	91,891	42	3,815,328	20,214	35	697,782	6,925	20	141,240	6,286	20	124,717	791	22	173,000
Palo Alto	67,185	37	2,486,231	62,304	41	2,559,202	81	22	1,845	701	25	17,336	645	29	18,574
Plymouth	151,690	38	5,711,903	96,814	38	3,706,526	1,575	30	47,906	25,922	23	605,572	9,139	21	188,242
Pocahontas	96,027	43	4,145,028	80,848	43	3,447,470	86	21	1,832	512	22	11,525	311	37	11,444
Polk	102,736	39	3,983,490	39,089	39	1,527,472	4,416	20	10,507	7,880	20	160,095	350	29	10,277
Pottawattamie	174,217	38	6,713,344	46,677	27	1,239,230	3,365	19	63,556	17,138	18	310,574	3,531	22	77,517
Poweshiek	94,055	45	4,237,978	44,177	40	1,784,166	427	21	10,328	2,665	21	57,181	1,766	29	51,626
Ringgold	67,051	40	2,692,558	26,598	26	694,467	1,483	14	20,367	107	12	1,272	47	27	1,265
Sac	109,233	47	5,138,304	69,628	42	2,957,786	69	27	1,895	903	22	20,237	4,003	27	109,906
Scott	69,038	44	3,007,407	25,093	35	887,483	8,276	24	202,085	4,745	18	86,095	15,841	25	393,999
Shelby	117,814	44	5,212,707	43,105	29	1,235,851	459	17	7,896	11,537	17	201,309	9,401	20	192,633
Sioux	137,843	48	6,653,099	85,912	45	3,825,537	395	31	12,298	13,460	22	300,667	18,422	30	554,365
Story	114,715	47	5,389,889	63,418	38	2,414,785	1,246	19	23,167	1,337	21	28,077	231	30	7,101
Tama	124,575	37	4,567,248	62,928	38	2,377,333	346	22	7,757	5,673	16	92,607	5,112	31	156,617
Taylor	73,308	37	2,719,578	24,465	29	710,536	2,309	15	35,741	600	18	10,652	770	27	20,769
Union	61,152	41	2,480,402	21,940	29	642,764	431	13	5,801	285	18	4,997	386	22	8,523
Van Buren	48,415	41	1,997,081	19,698	31	613,048	6,535	14	90,676	88	16	1,436	165	22	3,638
Wapello	50,931	43	2,213,082	19,155	30	573,050	4,733	17	82,129	524	15	7,632	383	25	9,571
Warren	77,428	38	2,945,267	21,568	36	771,191	5,259	21	111,417	3,242	22	69,808	768	27	20,784
Washington	88,007	46	4,046,383	42,632	38	1,601,393	3,107	18	55,426	1,671	23	39,105	527	32	16,728
Wayne	62,458	35	2,210,449	28,813	30	856,708	1,141	16	18,335	120	15	1,750	12	32	383
Webster	114,434	47	5,344,554	106,065	37	3,872,205	83	23	1,896	3,708	22	83,061	368	33	12,283
Winnebago	46,419	32	1,466,864	32,169	33	1,069,556	14	15	210	12,710	20	260,537	3,382	24	80,904
Winneshiek	64,496	30	1,932,994	60,649	28	1,667,971	160	20	3,204	7,701	20	155,868	17,177	23	402,723
Woodbury	160,500	40	6,498,330	59,713	32	1,911,856	5,579	21	116,374	9,141	19	174,818	5,236	28	144,152
Worth	39,933	29	1,189,179	50,583	27	1,340,753	18	13	227	10,637	19	199,472	3,653	19	71,970
Wright	89,737	47	4,199,570	76,117	39	2,955,237	123	18	2,210	2,201	27	51,318	1,459	32	47,273
Total	8,399,712	39.8	334,374,428	4,697,749	38	169,207,098	196,019	18.5	3,635,405	350,130	19.3	6,773,799	324,571	25.9	8,614,541

TABLE No. 3

Acreage, yield per acre and total yield of rye, tame hay, wild hay, alfalfa, potatoes, and flax seed, by counties for the year 1910.

Counties	Rye			Hay (tame)			Hay (wild)			Alfalfa		Potatoes			Flax Seed	
	Acres	Bushels per acre	Total bushels	Acres	Tons per acre	Total tons	Acres	Tons per acre	Total tons	Acres	Total tons	Acres	Bushels per acre	Total bushels	Acres	Total bushels
Adair	115	11	1,233	48,134	1	46,850	3,493	1.4	4,963	24	29	1,116	78	86,816	--------	--------
Adams	42	14	586	33,840	1	34,101	1,718	1.3	2,160	49	141	525	68	35,940	--------	--------
Allamakee	448	16	7,168	48,155	1	46,267	1,052	1.5	1,526	3	7	1,050	94	98,486	49	145
Appanoose	133	10	1,264	43,878	.9	41,564	792	1.3	1,044	6	13	337	57	19,280	--------	--------
Audubon	--------	----	--------	32,976	.8	26,751	2,683	1.5	4,071	24	48	876	87	76,502	--------	--------
Benton	432	19	8,375	52,482	1.2	65,443	4,106	1	4,372	3	15	1,541	63	97,836	--------	--------
Black Hawk	1,959	11	20,630	34,613	1.2	42,379	10,065	.9	9,357	2	6	1,968	72	141,230	35	--------
Boone	150	17	2,598	27,520	1	26,091	16,107	.9	14,415	23	67	1,204	58	69,527	4	55
Buchanan	591	15	8,796	43,195	1	42,757	12,868	.9	11,397	3	3	1,022	61	62,738	10	100
Bremer	631	13	7,915	20,017	.8	16,785	20,812	.8	16,656	--------	--------	1,346	67	89,877	5	25
Buena Vista	25	28	690	27,202	1.1	30,767	17,363	1.1	19,432	63	398	1,696	93	158,209	54	888
Butler	1,701	13	22,887	30,655	.9	27,301	11,083	.9	10,039	3	4	1,809	59	107,804	--------	--------
Calhoun	208	10	2,140	19,374	1	20,355	16,212	.9	15,372	4	15	1,094	77	84,749	246	2,153
Carroll	9	21	185	33,852	.9	31,538	11,859	1.1	13,347	24	59	2,187	102	222,813	--------	--------
Cass	48	19	904	42,912	.9	38,919	2,095	1.5	3,087	47	111	1,468	72	106,203	--------	--------
Cedar	408	13	5,440	48,539	1.3	62,935	263	1.1	285	12	23	1,107	73	80,974	--------	--------
Cerro Gordo	132	17	2,188	30,021	1	30,521	11,772	1	11,151	--------	--------	1,434	65	93,699	313	3,286
Cherokee	8	12	95	34,440	1.3	46,369	11,067	1.1	12,116	185	480	1,868	99	185,419	26	231
Chickasaw	137	16	2,204	32,717	.9	27,626	13,045	.9	11,232	--------	--------	1,072	60	64,140	905	6,621
Clarke	23	12	278	33,075	.8	25,409	247	.7	184	--------	--------	348	64	22,373	--------	--------
Clay	46	21	960	31,950	1.1	35,843	23,715	1	24,888	10	16	1,013	90	91,116	438	5,534
Clayton	913	16	15,046	57,341	1.4	79,184	1,734	1.4	2,489	151	--------	1,889	77	143,721	4	30
Clinton	864	16	13,951	64,373	1.3	84,427	3,032	1	3,265	13	27	1,073	92	98,326	--------	--------
Crawford	19	15	280	46,660	.9	44,009	5,518	1	5,520	249	667	2,157	94	202,423	--------	--------
Dallas	174	17	3,011	30,466	1	31,049	6,069	1	5,994	63	130	830	62	51,245	--------	--------
Davis	190	12	2,307	48,533	.9	41,849	86	1.7	146	3	5	546	60	33,013	--------	--------
Decatur	155	10	1,578	45,323	1	43,933	340	1.1	387	8	11	353	68	23,922	88	--------
Delaware	1,098	14	15,587	43,592	1.2	52,655	7,006	1	7,010	4	4	1,061	56	59,873	--------	--------
Des Moines	333	14	4,797	25,491	1.3	34,316	194	1.5	297	4	5	1,110	66	72,720	--------	--------
Dickinson	45	19	860	19,141	1.2	23,266	17,651	1	18,253	8	8	902	85	76,679	479	5,562
Dubuque	460	17	7,542	55,348	1.2	66,541	842	1.6	1,318	9	23	1,898	92	173,819	--------	--------

Emmet	49	32	1,565	23,536	1	23,341	12,794	1	12,296	--------	--------	776	87	67,745	727	8,210
Fayette	546	16	8,651	57,650	1	60,044	12,138	.8	10,116	9	21	1,540	73	111,459	282	1,755
Floyd	467	12	5,610	34,076	.9	30,740	5,795	.9	5,245	13	29	1,416	96	135,957	366	3,162
Franklin	133	16	2,132	39,503	1	31,318	16,788	.9	14,355	26	77	1,726	56	97,205	173	1,719
Fremont	171	18	3,131	20,806	1.4	30,137	3,631	1.5	5,325	2,028	6,545	775	61	47,001	--------	--------
Greene	20	30	594	28,864	1	28,781	12,736	1	12,490	20	39	965	74	70,944	25	185
Grundy	32	21	680	30,285	1.3	40,149	7,431	1	7,209	2	3	7,220	81	585,218	--------	--------
Guthrie	21	14	292	39,043	.9	35,731	3,705	1	3,547	4	14	695	78	54,287	--------	--------
Hamilton	40	10	420	28,236	1.3	36,299	17,038	1	17,456	31	64	898	61	54,538	80	900
Hancock	200	16	3,219	28,320	1.2	33,305	19,919	1	19,901	9	71	1,006	62	67,545	459	3,667
Hardin	33	21	696	30,892	1.3	40,357	10,598	1	10,392	7	13	3,571	42	140,993	--------	--------
Harrison	71	19	1,361	20,410	.7	14,642	10,002	1.2	12,049	4,336	10,456	1,437	52	75,218	--------	--------
Henry	305	14	4,388	29,459	1.3	37,555	--------	----	--------	29	85	471	72	34,005	--------	--------
Howard	53	15	777	36,496	.7	26,712	8,815	.7	6,553	--------	--------	800	83	66,134	2,653	17,717
Humboldt	11	20	224	23,006	1.3	29,897	14,370	1	13,738	39	123	786	82	64,613	451	6,007
Ida	15	30	450	29,649	1.1	34,099	2,547	1.1	2,973	69	166	1,064	100	106,136	35	550
Iowa	333	15	4,848	47,356	1.2	54,574	1,106	.9	980	12	20	1,427	75	106,876	--------	--------
Jackson	639	12	7,907	59,934	1.1	63,146	807	1.3	1,209	4	11	1,042	91	95,024	--------	--------
Jasper	180	10	1,807	50,018	1.1	54,026	1,490	1.1	1,614	21	59	1,259	69	86,082	--------	--------
Jefferson	178	15	2,666	36,071	1.2	44,331	7	1.1	8	9	27	550	65	35,551	--------	--------
Johnson	803	15	11,910	49,752	1.2	60,302	700	1.1	741	--------	--------	1,276	89	111,498	--------	--------
Jones	542	14	7,630	53,724	1.3	60,148	347	1.2	407	77	140	697	87	60,683	--------	--------
Keokuk	346	14	4,823	47,247	1.2	56,979	178	1.5	259	13	26	832	74	61,874	--------	--------
Kossuth	13	19	213	40,864	.9	38,330	57,548	.9	50,331	11	22	1,720	71	121,754	1,262	14,381
Lee	1,290	12	15,951	33,637	1.3	42,090	129	1.7	218	19	51	1,054	82	86,000	--------	--------
Linn	851	16	13,213	53,023	1.2	61,691	3,384	1	3,510	7	14	1,714	68	116,120	--------	--------
Louisa	1,406	12	16,767	18,895	1.5	28,052	391	1.4	547	17	63	437	83	36,356	--------	--------
Lucas	86	10	877	39,914	.8	32,399	170	1	160	3	7	267	71	19,041	--------	--------
Lyon	29	24	690	21,637	1	21,102	10,562	1.4	14,385	37	90	1,938	70	134,829	133	1,235
Madison	59	13	627	40,124	1	39,447	1,606	1	1,543	3	2	739	78	57,434	2	10
Mahaska	204	13	2,692	28,904	1.1	31,584	243	1.3	308	10	--------	563	62	34,968	22	198
Marion	1,470	11	16,796	37,949	1.1	42,417	763	1.1	847	272	320	694	71	49,252	80	324
Marshall	130	18	2,364	41,148	1.3	53,578	1,146	1	1,186	3	11	2,543	89	225,744	--------	--------
Mills	50	13	630	19,201	1	19,674	3,088	1	3,340	2,526	6,866	558	47	26,317	--------	--------
Mitchell	24	18	421	31,468	.8	24,378	3,072	.8	2,467	--------	--------	1,819	81	147,990	2,354	14,787
Monona	91	13	1,211	14,936	.9	13,130	15,110	1.2	17,653	3,167	8,290	1,244	67	83,795	15	52
Monroe	51	11	555	35,152	.8	29,462	--------	----	--------	--------	--------	288	66	19,057	--------	--------
Montgomery	50	19	930	31,343	1.2	36,752	930	1.5	1,396	397	1,215	860	62	53,413	--------	--------
Muscatine	2,968	11	33,718	28,846	1.3	36,374	1,312	1	1,292	20	67	2,476	71	175,809	--------	--------
O'Brien	5	16	80	33,497	1.4	47,252	9,325	1.3	12 580	--------	--------	1,804	93	168,603	141	1,302
Osceola	6	13	80	20,040	1.4	28,283	9,859	1.2	12,307	--------	--------	1,184	98	115,787	956	10,326
Page	174	18	3,095	35,197	1.3	46,273	1,255	1.3	1,669	76	225	631	70	44,029	--------	--------
Palo Alto	74	13	930	18,948	1	18,331	33,429	1.2	38,953	8	31	828	69	57,024	633	7,643
Plymouth	37	14	520	34,932	1.2	42,495	26,825	1.2	31,285	1,174	5,199	2,110	87	182,978	56	473
Pocahontas	38	11	433	19,297	1	20,540	26,381	1	26,072	12	26	1,212	78	94,841	559	5,912
Polk	130	15	1,978	38,722	1	37,131	3,194	1.5	4,918	91	235	2,168	59	129,100	--------	--------
Pottawattamie	74	16	1,177	46,801	.8	39,572	10,203	1.1	11,271	4,723	12,494	2,647	53	141,026	--------	--------
Poweshiek	83	17	1,427	45,496	1.	47,352	221	1.1	249	2	6	1,142	72	81,332	--------	--------
Ringgold	43	14	618	58,341	.8	41,184	432	1	419	11	43	329	88	29,111	--------	--------

TABLE No. 3—CONTINUED

Counties	Rye			Hay (tame)			Hay (wild)			Alfalfa		Potatoes			Flaxseed	
	Acres	Bushels per acre	Total bushels	Acres	Tons per acre	Total tons	Acres	Tons per acre	Total tons	Acres	Total tons	Acres	Bushels per acre	Total bushels	Acres	Total bushels
Sac	--------	----	--------	31,613	1.3	41,467	11,258	1.2	13,560	103	341	1,342	84	112,719	11	158
Scott	1,728	16	27,242	35,480	1.3	46,753	2,748	1.3	3,597	41	94	8,051	87	701,104	--------	--------
Shelby	47	16	767	38,984	.8	32,257	6,014	1.4	8,383	173	371	1,439	88	127,621	--------	--------
Sioux	10	30	300	30,568	1.2	35,270	18,917	1.4	26,535	352	841	2,116	70	149,614	63	975
Story	82	14	1,175	33,964	1.2	39,495	8,558	.9	8,035	57	117	739	76	56,176	8	72
Tama	103	13	1,364	52,229	1.2	64,606	2,441	1.1	2,784	6	8	2,715	97	265,079	15	80
Taylor	42	11	453	42,069	1	41,606	558	1.3	729	27	57	586	58	34,043	--------	--------
Union	36	14	488	35,363	.9	30,726	1,007	1.1	1,140	6	6	762	71	54,126	--------	--------
Van Buren	167	14	2,397	41,052	1	43,734	27	1.1	30	85	273	637	57	36,595	--------	--------
Wapello	312	14	4,241	34,728	1	33,121	27	1	28	2	5	998	65	65,051	--------	--------
Warren	252	14	3,651	43,040	.9	38,813	741	1	725	21	30	952	71	67,589	--------	--------
Washington	109	18	1,994	41,436	1.4	57,292	--------	----	--------	10	30	693	87	60,489	--------	--------
Wayne	63	17	1,076	54,110	1	53,258	100	1.2	122	3	10	208	90	18,770	6	60
Webster	15	16	231	25,671	1.2	29,809	27,770	1	26,495	11	52	2,097	44	92,174	246	2,036
Winnebago	82	15	1,232	20,934	1.1	22,701	21,871	1	24,889	--------	--------	979	47	46,160	793	8,092
Winneshiek	375	18	6,906	56,591	1	57,363	4,753	1	4,551	1	1	1,117	95	105,692	1,835	11,833
Woodbury	51	23	1,180	33,591	1	33,129	13,710	1.2	16,449	2,886	7,821	2,203	79	175,052	15	135
Worth	65	12	786	22,323	.9	21,262	19,415	.9	17,934	7	--------	702	55	38,589	2,318	17,998
Wright	22	18	395	33,240	1.2	39,916	14,684	1.2	17,602	--------	--------	1,065	67	71,158	361	3,603
Total	29,502	13.8	407,058	3,591,545	1.1	3,876,844	776,180	1.1	807,280	24,132	65,629	132,640	75.3	9,986,881	19,821	170,387

TABLE No. 4

Number horses all ages, mules all ages, and cows all ages. Number cattle sold for slaughter and average number of cows milked. Number swine on farms July 1, 1910. Number sheep kept on farm, number shipped in for feeding and number sold for slaughter. Pounds of wool sold. Total number all varieties of poultry on farm July 1, 1910, and total number dozen eggs received by counties for the year 1910.

Counties	Horses (all ages)	Mules (all ages)	Cattle			Hogs on farm July 1, 1910	Sheep				Poultry	
			Cattle (all ages)	No. sold for slaughter	Average No. of cows milked		No. sheep kept on farms	No. sheep shipped in for feeding	No. sheep sold for slaughter	No. pounds wool sold	All varieties on farm July 1, 1910	No. dozen eggs received
Adair	16,069	824	48,904	17,962	10,141	87,883	10,074	4,731	6,829	37,054	415,361	893,734
Adams	9,655	812	30,185	12,449	5,449	59,312	11,046	3,885	8,475	40,512	298,164	732,524
Allamakee	10,784	58	46,591	14,676	13,906	56,073	12,664	469	5,989	59,717	260,320	802,805
Appanoose	8,430	783	24,934	3,680	6,235	20,313	12,375	2,252	3,123	37,638	165,042	391,531
Audubon	11,827	413	40,461	14,054	8,803	73,123	5,781	2,414	2,610	27,102	300,698	777,012
Benton	18,469	537	60,154	15,822	11,414	108,505	7,357	9,256	6,780	30,509	448,907	933,190
Black Hawk	13,439	123	44,584	10,304	14,689	88,988	4,224	1,243	3,270	23,312	352,605	785,967
Boone	14,933	444	37,001	9,024	10,328	61,550	1,325	705	352	3,853	463,576	1,014,170
Bremer	10,436	38	39,145	3,808	18,897	58,647	2,766	74	984	11,195	327,533	837,763
Buchanan	12,573	187	44,832	6,488	14,176	74,117	5,408	1,017	2,016	24,975	430,745	954,395
Buena Vista	12,900	235	48,548	10,431	12,427	73,264	1,261	176	1,100	5,785	311,690	722,229
Butler	13,256	171	49,569	6,379	14,416	70,165	3,821	622	1,586	23,224	385,057	864,617
Calhoun	11,435	461	25,902	7,612	7,123	47,437	3,328	874	1,261	9,574	287,131	698,973
Cass	16,016	1,066	44,496	17,862	7,757	110,750	10,522	6,047	9,819	40,723	364,590	697,672
Cedar	11,492	656	49,765	17,515	8,522	124,754	15,158	28,598	23,883	88,593	381,486	1,014,471
Carroll	12,998	389	38,074	6,842	9,904	77,010	2,096	435	1,494	7,180	308,251	621,365
Cerro Gordo	12,009	163	42,693	8,493	11,920	56,666	2,366	------------	598	13,106	285,142	279,981
Cherokee	13,904	403	47,971	14,666	7,366	99,007	3,296	5,519	3,519	15,734	292,882	799,835
Chickasaw	11,182	7	42,877	8,221	14,865	49,564	3,267	123	917	21,661	278,111	794,288
Clarke	8,970	466	22,332	7,198	4,361	29,690	2,673	------------	789	12,682	295,508	439,310
Clay	11,006	157	39,061	11,574	9,627	53,815	9,581	3,176	6,962	47,993	250,086	656,481
Clayton	15,658	53	61,023	15,949	21,159	119,300	13,736	868	6,359	80,595	464,875	2,082,747
Clinton	17,560	179	72,457	22,335	16,568	108,357	6,580	7,538	5,099	17,155	506,197	1,327,172
Crawford	16,861	683	63,200	19,698	10,706	125,710	9,769	16,117	13,770	17,486	364,238	847,224
Dallas	15,909	751	38,390	15,701	8,436	91,667	4,047	577	1,675	13,927	423,807	841,533
Davis	11,798	715	30,019	10,256	7,405	32,390	63,740	5,912	18,129	301,841	418,511	863,344
Decatur	11,624	828	29,290	10,529	6,219	37,389	11,330	1,266	4,912	50,363	258,999	913,684

TABLE No. 4—CONTINUED

Counties	Horses (all ages)	Mules (all ages)	Cattle			Hogs on farm July 1, 1910	Sheep				Poultry	
			Cattle (all ages)	No. sold for slaugeter	Average No. of cows milked		No. sheep kept on farms	No. sheep shipped in for feeding	No. sheep sold for slaughter	No. pounds wool sold	All varieties on farm July 1, 1910	No. dozen eggs received
Delaware	12,819	156	51,704	12,941	20,485	101,124	7,233	1,695	4,744	37,217	388,751	856,881
Des Moines	10,296	391	21,949	8,665	4,671	52,756	3,897	6	1,586	18,741	316,361	884,513
Dickinson	8,033	171	28,868	7,148	12,175	25,784	9,700	225	5,371	31,372	171,061	381,060
Dubuque	12,438	41	46,331	12,993	14,986	100,082	6,063	23	3,251	35,862	317,483	790,293
Emmet	6,655	76	22,022	4,409	6,253	25,067	4,172	2,370	2,374	20,435	137,578	357,500
Fayette	15,990	239	68,384	12,173	23,313	89,000	8,836	2,386	2,372	49,736	516,894	1,419,940
Floyd	10,785	42	36,547	7,040	10,011	51,670	7,254	491	2,028	33,702	340,043	864,566
Franklin	13,129	141	44,519	4,689	10,876	74,577	5,268	12,034	12,092	20,561	339,554	580,546
Fremont	10,404	2,214	23,803	8,416	4,815	61,376	2,575	3,990	2,645	2,537	274,115	563,860
Greene	15,398	464	36,367	11,130	8,087	63,368	2,095	5,830	2,938	7,951	424,143	821,744
Grundy	13,798	282	50,357	9,737	11,188	87,001	7,179	3,566	1,822	21,480	322,275	986,824
Guthrie	14,629	466	42,561	16,748	9,739	73,185	4,830	1,490	3,305	20,708	360,415	618,020
Hamilton	15,470	391	39,165	10,163	10,369	62,822	5,210	2,113	4,193	33,971	440,286	906,233
Hancock	13,040	173	35,809	4,048	10,740	39,919	2,339	2,021	1,581	8,855	253,548	548,088
Hardin	12,849	328	36,933	7,270	12,954	88,418	5,647	3,055	5,070	22,422	316,231	1,210,618
Harrison	14,201	1,304	35,280	15,737	8,534	94,820	3,250	23,267	18,310	45,394	387,173	1,216,614
Henry	12,518	558	24,738	8,259	4,790	51,047	27,547	553	7,188	137,673	286,003	1,205,341
Howard	8,800	32	29,718	5,151	10,528	35,814	6,787	344	2,599	27,643	279,360	565,420
Humboldt	9,653	147	29,670	7,795	7,441	49,335	3,785	3,234	2,702	15,887	235,706	632,780
Ida	10,510	513	41,609	15,350	5,965	90,145	3,261	7,571	8,677	19,550	252,821	512,651
Iowa	16,135	746	56,928	20,328	10,215	108,413	11,254	250	5,337	59,176	462,061	1,096,263
Johnson	16,100	689	47,600	11,591	7,344	80,789	3,939	590	2,513	21,835	319,584	688,434
Jasper	21,918	973	57,672	15,957	9,549	127,633	9,970	2,244	6,895	40,842	565,716	1,383,109
Jefferson	11,777	301	27,808	8,761	6,100	50,065	8,611	356	3,233	37,489	339,782	922,686
Johnson	16,100	680	47,609	11,591	7,344	111,678	11,815	1,854	4,382	71,719	443,399	1,080,917
Jones	13,936	279	60,765	20,524	48,518	106,950	6,938	6,524	8,197	40,384	354,654	998,311
Keokuk	18,831	863	38,671	13,132	7,469	89,733	8,970	390	7,603	53,765	540,663	1,451,970
Kossuth	17,989	226	56,032	8,707	17,098	81,024	5,981	3,029	3,245	21,093	536,088	1,152,003
Lee	10,191	656	24,491	4,775	6,294	32,897	25,628	2,521	8,191	160,061	283,767	902,093
Linn	15,549	320	52,785	12,671	14,534	93,404	11,814	3,692	6,314	56,665	469,080	1,071,860
Louisa	9,963	260	22,531	8,873	3,763	57,921	3,390	3,782	3,881	18,197	226,452	525,155
Lucas	9,918	696	29,249	7,344	5,579	31,957	13,557	1,022	5,232	57,680	268,600	694,198
Lyon	12,406	90	37,108	6,796	9,119	73,959	3,354	3,208	1,661	13,963	201,894	538,315

Madison	14,039	823	41,240	14,748	7,123	74,927	10,495	4,306	6,906	35,157	370,859	887,628
Mahaska	12,677	748	29,495	12,151	6,834	73,063	12,309	7,741	6,472	58,450	326,911	1,352,582
Marion	15,597	840	32,618	11,701	7,081	73,801	17,977	23,888	18,315	85,714	429,711	1,114,952
Marshall	16,211	467	45,431	12,533	8,568	92,817	9,922	5,148	7,329	49,485	426,538	773,765
Mills	8,005	951	21,615	8,159	3,578	49,505	2,472	1,130	1,541	6,218	173,753	356,923
Mitchell	10,088	64	39,526	8,599	9,190	83,652	5,144	891	2,286	29,412	263,308	880,765
Monona	13,392	1,272	33,477	9,049	7,121	68,093	989	669	912	7,043	289,499	809,935
Monroe	8,049	795	23,020	11,210	5,612	23,839	5,099	145	1,719	23,650	222,430	426,870
Montgomery	11,431	949	41,769	11,288	5,510	79,279	4,790	2,844	3,073	17,640	278,793	831,795
Muscatine	11,430	485	39,239	16,980	6,742	67,651	5,543	3,092	3,928	21,195	286,509	749,759
O'Brien	13,962	234	45,710	10,959	10,111	80,681	13,405	1,639	9,112	67,824	237,860	585,242
Osceola	7,707	50	28,480	4,638	6,246	37,404	5,272		1,277	26,332	160,260	482,128
Page	13,442	1,593	33,879	14,175	6,543	88,655	6,521	4,540	5,688	31,023	327,662	816,082
Palo Alto	9,838	114	36,412	7,428	11,680	44,487	3,674	844	1,761	16,299	250,119	592,583
Plymouth	21,603	375	64,373	15,579	13,248	131,655	3,815	4,830	5,364	17,701	307,692	924,124
Pocahontas	12,584	356	31,859	7,472	8,521	50,009	4,121	3,005	3,346	17,907	360,737	1,020,222
Polk	14,402	648	32,415	10,939	8,907	59,105	2,592	1,045	1,634	6,094	375,130	1,000,620
Pottawattamie	20,628	1,896	65,750	24,139	11,606	156,802	5,108	16,219	14,797	30,583	503,929	1,361,524
Poweshiek	17,021	754	49,915	20,011	8,830	105,239	8,218	4,370	4,758	32,488	378,449	888,122
Ringgold	13,447	1,057	33,434	9,088	6,647	42,647	11,409	757	2,680	51,919	324,144	830,753
Sac	15,097	578	48,328	12,793	8,824	81,244	24,163	21,571	4,604	29,375	307,926	821,835
Scott	11,878	433	42,558	11,870	13,398	89,113	2,557	312	1,481	15,189	375,532	1,040,179
Shelby	15,721	637	52,744	22,999	9,113	115,100	3,191	15,739	13,310	12,542	376,376	953,719
Sioux	18,118	218	64,110	13,558	13,661	129,141	10,749	5,352	12,151	43,102	364,806	1,123,585
Story	16,325	453	35,241	6,429	9,213	67,649	3,890	4,669	4,431	15,410	477,984	1,251,561
Tama	18,705	387	71,192	23,883	12,429	117,161	7,794	1,916	5,024	45,631	472,738	1,237,700
Taylor	13,785	1,204	31,405	12,775	6,767	60,836	11,441	2,118	6,089	57,451	296,352	909,507
Union	10,957	683	20,398	7,960	5,585	42,263	4,374	1,119	2,592	17,082	265,624	587,825
Van Buren	12,028	747	27,685	7,123	5,912	37,236	46,094	4,301	13,548	228,911	336,298	1,051,927
Wapello	9,901	587	23,487	9,672	6,957	42,066	17,128	1,677	5,273	81,401	322,704	643,663
Warren	14,524	518	36,161	17,576	7,149	62,093	11,109	3,720	4,318	41,575	380,445	968,981
Washington	15,439	916	38,630	13,548	6,107	113,509	11,880	3,251	6,021	52,282	394,798	1,195,615
Wayne	12,465	1,351	33,114	9,588	5,957	40,250	6,296	1,095	2,821	25,723	293,849	800,797
Webster	15,428	451	40,359	10,166	11,342	55,240	2,595	2,828	1,637	9,014	414,712	900,750
Winnebago	7,978	80	31,226	5,882	11,701	36,243	2,465	422	1,093	11,751	237,888	609,989
Winneshiek	15,517	52	63,017	17,203	18,606	89,533	19,570	1,150	11,262	98,771	402,918	1,114,086
Woodbury	16,365	751	45,236	16,721	8,657	89,356	9,733	15,302	8,676	22,057	324,653	855,392
Worth	7,839	50	32,979	4,850	9,995	34,715	1,971	333	395	9,239	188,356	560,729
Wright	13,090	283	37,302	7,684	10,943	52,434	5,046	1,351	1,481	20,172	282,378	557,933
Total	1,312,249	50,902	4,029,820	1,123,805	1,004,339	7,197,671	832,664	384,862	512,937	3,796,851	33,069,202	84,798,989

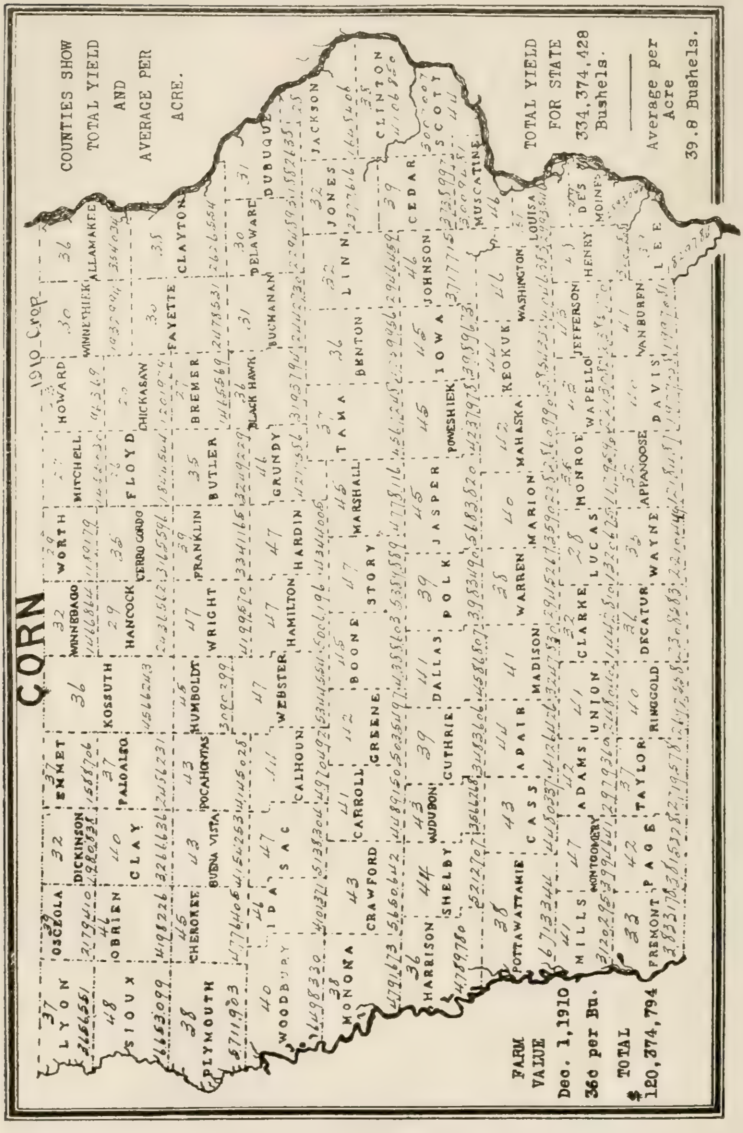
TABLE No. 5

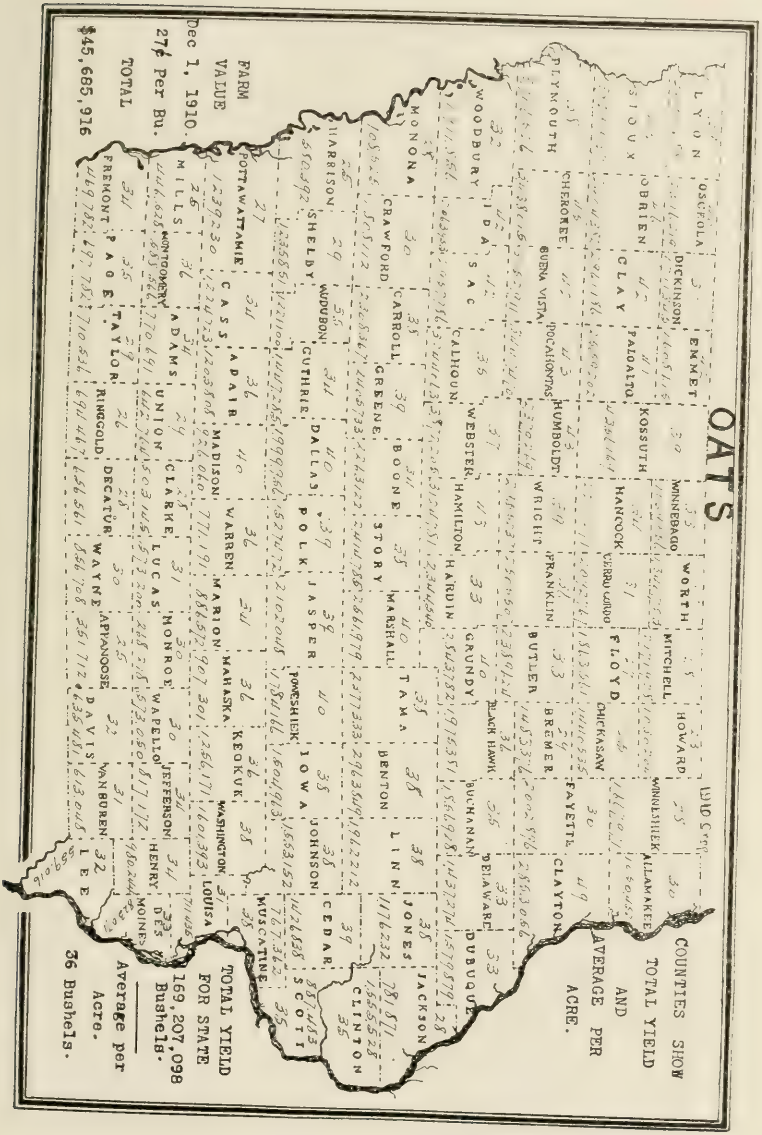
Acreage in sweet corn, pop corn, and acreage and total yield of timothy and clover seed by counties for the year 1910.

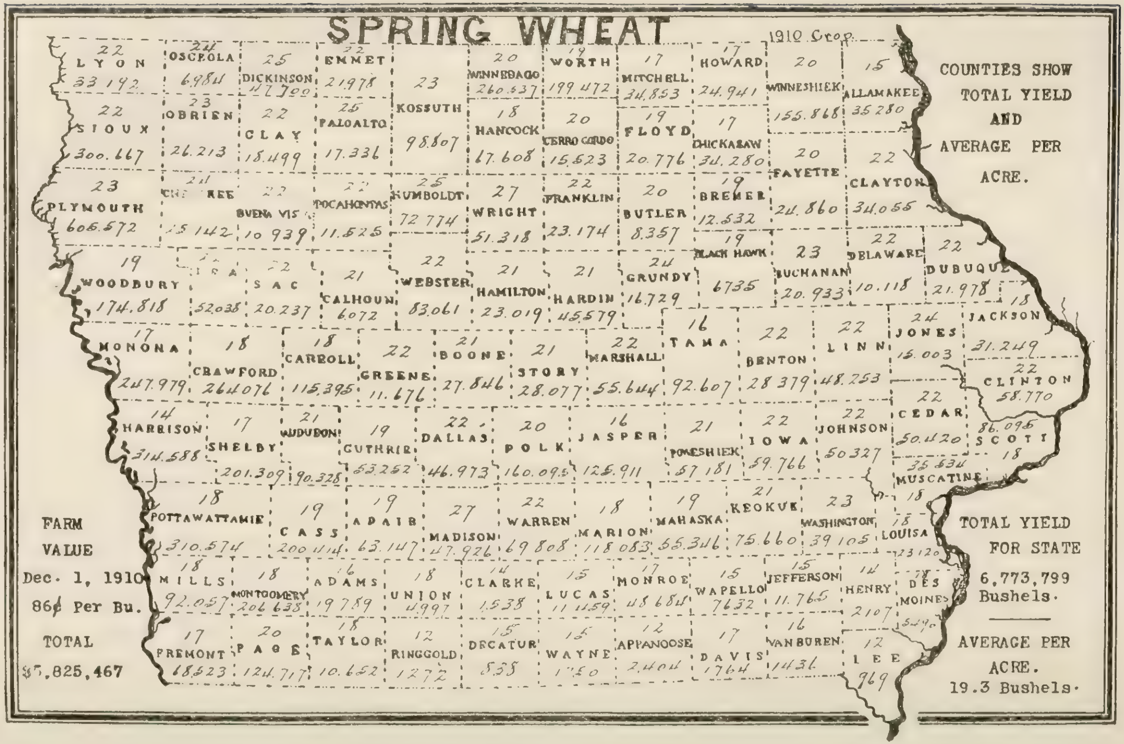
Counties	Sweet corn—acres	Pop corn—acres	Timothy Seed		Clover Seed	
			Acres	Total bushels	Acres	Total bushels
Adair	37	1	4,214	17,027	233	195
Adams	27	4	1,031	4,032	340	345
Allamakee	32	1	509	1,224	167	140
Appanoose	7	2	523	3,355	261	310
Audubon	388	40	386	1,305	22	43
Benton	3,199	----------	711	2,829	556	532
Black Hawk	1,723	16	204	683	131	172
Boone	27	19	36	106	421	358
Buchanan	953	1	556	2,356	19	24
Bremer	1,559	44	51	155	10	----------
Buena Vista	665	16	193	263	737	803
Butler	86	10	266	533	119	122
Calhoun	231	10	65	273	278	333
Carroll	5	8	469	1,767	421	807
Cass	1,194	80	405	1,799	368	309
Cedar	178	4	1,242	4,823	178	119
Cerro Gordo	11	1	234	630	273	249
Cherokee	3	12	229	1,159	1,001	1,042
Chickasaw	8	1	2,306	4,540	51	57
Clarke	13	2	2,649	7,794	139	103
Clay	2	55	1,817	9,200	375	429
Clayton	172	1	620	2,440	648	677
Clinton	23	----------	556	2,157	142	122
Crawford	5	3	264	742	80	93
Dallas	201	6	118	653	678	473
Davis	10	12	5,950	17,074	2,055	1,911
Decatur	12	5	3,449	11,682	1,259	1,326
Delaware	289	1	338	1,488	13	14
Des Moines	25	9	431	2,528	2,790	3,949
Dickinson	7	32	1,875	6,155	135	73
Dubuque	148	1	298	833	5	3
Emmet	----------	23	87	241	45	35
Fayette	574	4	1,015	2,585	77	84
Floyd	3	1	712	7,439	----------	----------
Franklin	700	2	66	209	31	20
Fremont	603	7	192	980	1,497	1,404
Greene	----------	2	27	138	119	70
Grundy	3	1	337	820	105	148
Guthrie	106	7	3,125	9,967	356	237
Hamilton	42	8	66	334	228	166
Hancock	167	16	114	401	599	564
Hardin	----------	10	129	344	255	822
Harrison	10	16	50	55	293	281
Henry	694	8	539	2,402	3,054	3,284
Howard	----------	----------	1,312	2,228	4	3
Humboldt	----------	----------	39	122	219	183
Ida	4	914	57	219	193	271
Iowa	262	1	8,847	36,525	750	1,419
Jackson	----------	----------	195	525	51	76
Jasper	180	2	503	2,283	2,054	2,074
Jefferson	14	----------	1,128	5,192	4,707	4,736
Johnson	2	2	779	3,454	853	1,305
Jones	152	28	398	1,474	7	9
Keokuk	2	1	1,506	6,026	1,695	1,906
Kossuth	16	13	65	256	519	316

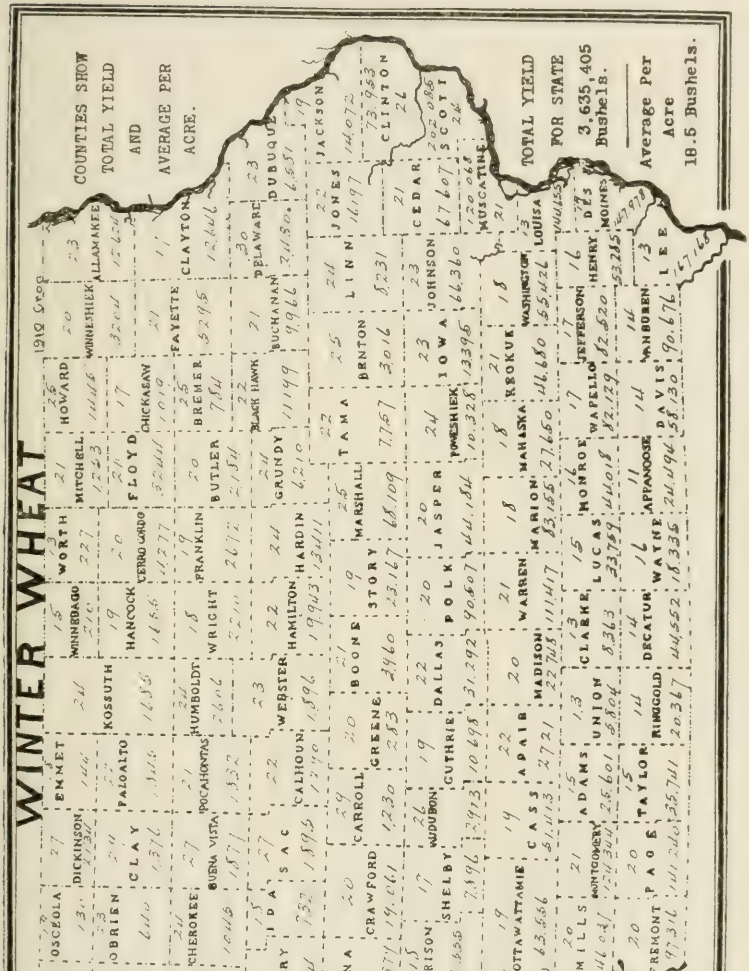
TABLE NO. 5—CONTINUED.

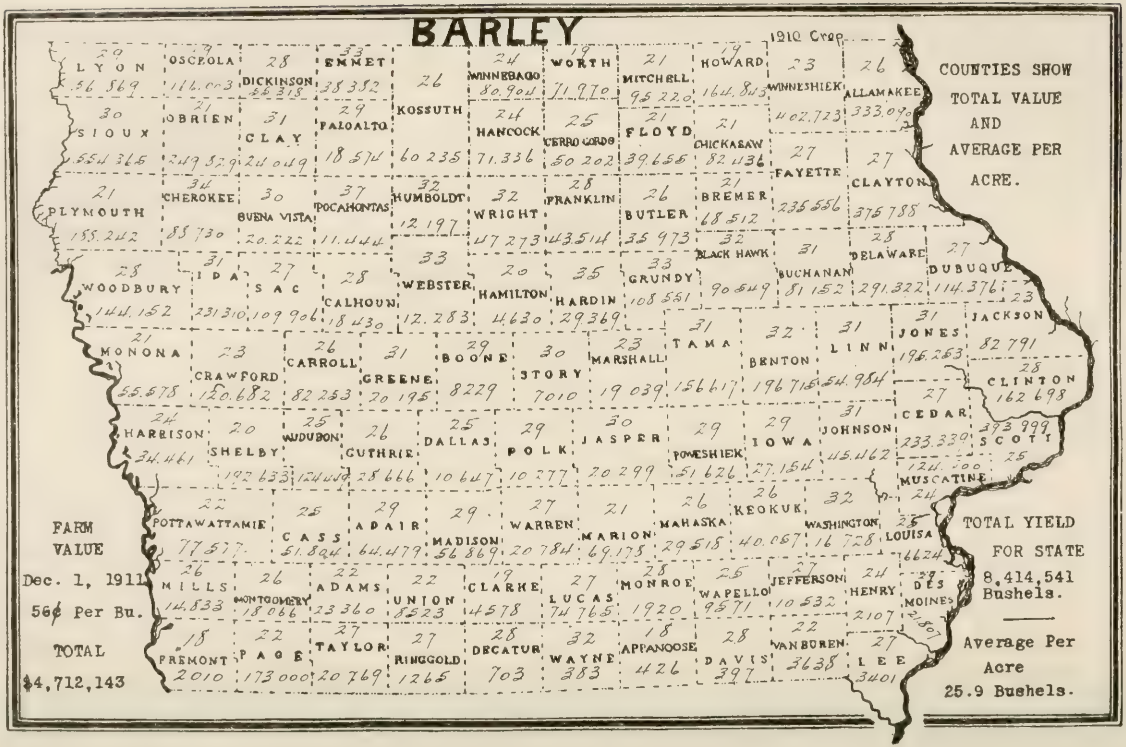
Counties	Sweet corn—acres	Pop corn—acres	Timothy Seed		Clover Seed	
			Acres	Total bushels	Acres	Total bushels
Lee	60	7	2,540	10,865	3,543	7,779
Linn	897	8	249	900	196	395
Louisa	537	6	316	1,299	724	972
Lucas	----------	----------	3,413	11,973	78	97
Lyon	12	----------	79	114	328	308
Madison	103	1	1,478	5,919	910	896
Mahaska	16	2	145	678	2,143	2,125
Marion	22	1	835	2,992	2,598	3,043
Marshall	1,034	15	618	2,734	1,407	1,658
Mills	7	2	82	355	319	471
Mitchell	232	1	1,020	2,545	31	44
Monona	52	8	192	716	194	233
Monroe	----------	----------	157	558	200	193
Montgomery	180	----------	370	1,873	923	859
Muscatine	31	9	129	483	512	428
O'Brien	5	6	1,591	6,643	387	529
Osceola	3	3	1,371	5,548	75	163
Page	67	1	609	2,699	2,506	2,677
Palo Alto	5	5	142	567	446	675
Plymouth	40	10	64	332	171	430
Pocahontas	----------	9	65	271	507	548
Polk	761	37	163	548	654	736
Pottawattamie	507	10	167	518	617	526
Poweshiek	50	8	3,345	13,546	666	809
Ringgold	1	5	2,025	6,552	826	662
Sac	1,057	3,198	299	1,637	164	141
Scott	17	14	266	1,033	474	501
Shelby	146	5	246	699	292	387
Sioux	5	2	213	828	253	294
Story	----------	2	91	243	127	95
Tama	662	3	1,085	4,502	923	1,125
Taylor	10	2	1,344	4,860	1,049	1,094
Union	20	1	1,824	6,203	301	315
Van Buren	27	3	2,145	8,490	6,469	6,898
Wapello	12	3	503	1,653	1,361	1,378
Warren	10	----------	640	3,257	355	392
Washington	----------	----------	476	2,130	2,357	3,051
Wayne	2	4	8,478	27,937	1,491	1,324
Webster	37	11	55	189	272	176
Winnebago	948	3	143	370	232	207
Winnishiek	16	----------	788	1,956	142	151
Woodbury	----------	5	539	2,174	700	731
Worth	72	7	216	459	85	103
Wright	5	11	80	309	198	282
Total	22,482	4,890	93,909	315,981	69,819	80,447


CORN
1910 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.
TOTAL YIELD FOR STATE 334,374,428 Bushels.
Average per Acre 39.8 Bushels.
FARM VALUE Dec. 1, 1910 36c per Bu.
TOTAL $ 120,374,794
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE


OATS
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.
TOTAL YIELD FOR STATE 169,207,098 Bushels.
Average per Acre. 36 Bushels.
FARM VALUE Dec 1, 1910. 27¢ Per Bu. TOTAL $45,685,916
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
O'BRIEN
CLAY
PALO ALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
JACKSON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
CLINTON
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE


SPRING WHEAT
1910 Crop.
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.
22 LYON 33 192
24 OSCEOLA 6984
25 DICKINSON 47 700
22 EMMET 21978
23 KOSSUTH 98807
20 WINNEBAGO 260.537
19 WORTH 199 472
17 MITCHELL 34.853
17 HOWARD 24.941
20 WINNESHIEK 155.868
15 ALLAMAKEE 35 280
22 SIOUX 300.667
23 OBRIEN 26.213
22 CLAY 18.499
25 PALOALTO 17.336
18 HANCOCK 17.608
20 CERRO GORDO 15.623
19 FLOYD 20.776
17 CHICKASAW 34.280
20 FAYETTE 24.860
22 CLAYTON 34.055
23 PLYMOUTH 606.572
24 CH KEE 15 142
22 BUENA VIS 10 939
22 POCAHONTAS 11.525
25 HUMBOLDT 72 774
27 WRIGHT 51.318
22 FRANKLIN 23.174
20 BUTLER 8.357
19 BREMER 12.532
19 BLACK HAWK 6735
23 BUCHANAN 20.933
22 DELAWARE 10.118
22 DUBUQUE 21.978
19 WOODBURY 174.818
IDA 52038
22 SAC 20.237
21 CALHOUN 6.072
22 WEBSTER 83.061
21 HAMILTON 23.019
21 HARDIN 45.579
24 GRUNDY 16.729
16 TAMA 92.607
22 BENTON 28 379
22 LINN 48.253
24 JONES 15.003
18 JACKSON 31.249
22 CLINTON 58.770
17 MONONA 247.979
18 CRAWFORD 264076
18 CARROLL 115.395
22 GREENE 11.676
21 BOONE 27.846
21 STORY 28.077
22 MARSHALL 55.644
14 HARRISON 314.588
17 SHELBY 201.309
21 AUDUBON 90.328
19 GUTHRIE 53.252
22 DALLAS 46.973
20 POLK 160.095
16 JASPER 125.911
21 POWESHIEK 57 181
22 IOWA 59.766
22 JOHNSON 50327
22 CEDAR 50.420
18 SCOTT 86.095
18 MUSCATINE 35 534
18 POTTAWATTAMIE 310.574
19 CASS 200 414
19 ADAIR 63.147
27 MADISON 47.926
22 WARREN 69 808
18 MARION 118 083
19 MAHASKA 55.346
21 KEOKUK 75.660
23 WASHINGTON 39 105
18 LOUISA 23 120
18 MILLS 92.057
18 MONTGOMERY 206 638
16 ADAMS 19 789
18 UNION 4997
14 CLARKE 1.538
15 LUCAS 11 459
17 MONROE 48 684
15 WAPELLO 7632
15 JEFFERSON 11.765
14 HENRY 2107
18 DES MOINES 5490
17 FREMONT 18523
20 PAGE 124.717
18 TAYLOR 10.652
12 RINGGOLD 1272
15 DECATUR 535
15 WAYNE 1750
12 APPANOOSE 2,404
17 DAVIS 1764
16 VAN BUREN 1431
12 LEE 969
FARM VALUE Dec. 1, 1910 86¢ Per Bu. TOTAL $5,825,467
TOTAL YIELD FOR STATE 6,773,799 Bushels.
AVERAGE PER ACRE. 19.3 Bushels.


WINTER WHEAT
1910 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.
TOTAL YIELD FOR STATE 3,635,405 Bushels.
Average Per Acre 18.5 Bushels.
FARM VALUE Dec. 1, 1910 86¢ Per Bu.
TOTAL $3,126,448.
LYON 25 2430
OSCEOLA
DICKINSON 27 2131
EMMET
KOSSUTH 24 1655
WINNEBAGO 15
WORTH 13 227
MITCHELL 21 1223
HOWARD 25 1446
WINNESHIEK 20 3200
ALLAMAKEE 23 1262
SIOUX 31
OBRIEN 23
CLAY 20 1376
PALO ALTO
HANCOCK 19 1655
CERRO GORDO 20 11277
FLOYD 21 5241
CHICKASAW 17 1019
FAYETTE 21 5295
CLAYTON 11 12646
PLYMOUTH 30 47906
CHEROKEE 24 1045
BUENA VISTA 27 1571
POCAHONTAS 21 1332
HUMBOLDT 24 2606
WRIGHT 18 2210
FRANKLIN 19 2672
BUTLER 20 2154
BREMER 25 784
BLACK HAWK 22 11199
BUCHANAN 21 9966
DELAWARE 30 2150
DUBUQUE 23 6551
WOODBURY 21 116314
IDA 15 752
SAC 27 1595
CALHOUN 22 1240
WEBSTER 23 1896
HAMILTON 22 19943
HARDIN 24 13411
GRUNDY 24 6210
TAMA 22 7757
BENTON 25 3016
LINN 24 8231
JONES 22 16197
JACKSON 19 14072
CLINTON 24 73953
MONONA 21
CRAWFORD 20 19061
CARROLL 29 1230
GREENE 20 283
BOONE 21 3960
STORY 19 23167
MARSHALL 25 68109
CEDAR 21 67607
SCOTT 24 202086
HARRISON 15 114355
SHELBY 17 7396
AUDUBON 26 2913
GUTHRIE 19 10698
DALLAS 22 31292
POLK 20 90607
JASPER 20 44184
POWESHIEK 24 10328
IOWA 23 13395
JOHNSON 23 66360
MUSCATINE 21 120068
POTTAWATTAMIE 19 63556
CASS 19 51413
ADAIR 22 2721
MADISON 20 22748
WARREN 21 111417
MARION 18 83155
MAHASKA 18 27650
KEOKUK 21 46680
WASHINGTON 18 55426
LOUISA 13 44455
MILLS 20 46037
MONTGOMERY 21 124344
ADAMS 15 25601
UNION 13 8804
CLARKE 13 8363
LUCAS 15 33759
MONROE 16 44018
WAPELLO 17 82129
JEFFERSON 17 82520
HENRY 16 53285
DES MOINES 17 47978
FREMONT 20 97316
PAGE 20 141240
TAYLOR 15 35741
RINGGOLD 14 20367
DECATUR 14 44552
WAYNE 16 18335
APPANOOSE 11 24494
DAVIS 14 58130
VAN BUREN 14 90676
LEE 13 67168


BARLEY
1910 Crop
LYON 20 56 569
OSCEOLA 19 116.003
DICKINSON 28 55 318
EMMET 33 38 382
KOSSUTH 26 60 235
WINNEBAGO 24 80.904
WORTH 19 71 970
MITCHELL 21 95 220
HOWARD 19 164.843
WINNESHIEK 23 402.723
ALLAMAKEE 26 333.090
SIOUX 30 554 365
OBRIEN 21 249 329
CLAY 31 24 049
PALOALTO 29 18 574
HANCOCK 24 71.336
CERRO GORDO 25 50 202
FLOYD 21 39.656
CHICKASAW 21 82.436
FAYETTE 27 235 556
CLAYTON 27 375 788
PLYMOUTH 21 155.242
CHEROKEE 34 85 730
BUENA VISTA 30 20.222
POCAHONTAS 37 11.444
HUMBOLDT 32 12 197
WRIGHT 32 47 273
FRANKLIN 28 43.514
BUTLER 26 35 973
BREMER 21 68 512
BLACK HAWK 32 90 649
BUCHANAN 31 81 152
DELAWARE 28 291.322
DUBUQUE 27 114.376
WOODBURY 28 144.152
IDA 31 231310
SAC 27 109 906
CALHOUN 28 18 430
WEBSTER 33 12.283
HAMILTON 20 4630
HARDIN 35 29.369
GRUNDY 33 108 551
JACKSON 23 82 791
MONONA 21 55.578
CRAWFORD 23 120.682
CARROLL 26 82 253
GREENE 31 20 195
BOONE 29 8229
STORY 30 7010
MARSHALL 23 19 039
TAMA 31 156617
BENTON 32 196 715
LINN 31 54.984
JONES 31 196.263
CLINTON 28 162 698
HARRISON 24 34.461
SHELBY 20 192 633
AUDUBON 25 124449
GUTHRIE 26 28 666
DALLAS 25 10 647
POLK 29 10 277
JASPER 30 20 299
POWESHIEK 29 51 626
IOWA 29 27.154
JOHNSON 31 45.462
CEDAR 27 233.339
SCOTT 25 393 999
MUSCATINE 24 124.[illegible]00
POTTAWATTAMIE 22 77 577
CASS 25 51.894
ADAIR 29 64.479
MADISON 29 56 869
WARREN 27 20 784
MARION 21 69.175
MAHASKA 26 29 518
KEOKUK 26 40.067
WASHINGTON 32 16 728
LOUISA 25 16624
MILLS 26 14.833
MONTGOMERY 26 18 066
ADAMS 22 23 360
UNION 22 8523
CLARKE 19 4578
LUCAS 27 74 765
MONROE 28 1920
WAPELLO 25 9571
JEFFERSON 27 10 532
HENRY 24 2107
DES MOINES 27 21.807
FREMONT 18 2010
PAGE 22 173 000
TAYLOR 27 20 769
RINGGOLD 27 1265
DECATUR 28 703
WAYNE 32 383
APPANOOSE 18 426
DAVIS 28 397
VAN BUREN 22 3638
LEE 27 3401

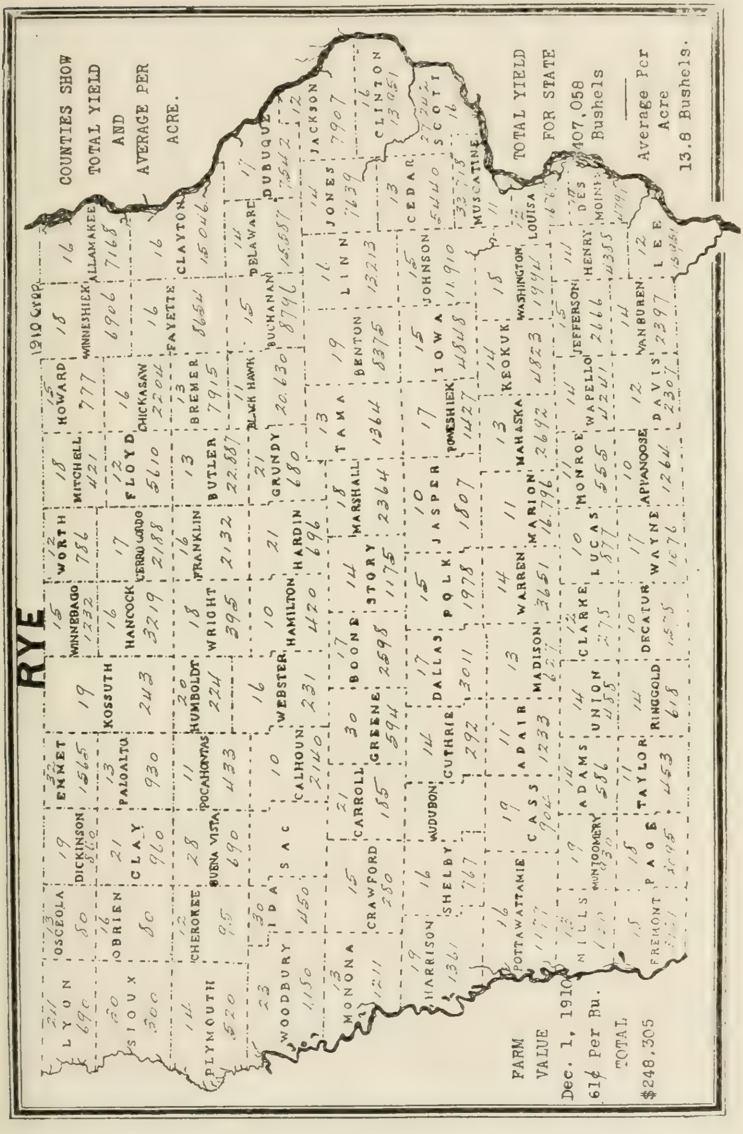
COUNTIES SHOW TOTAL VALUE AND AVERAGE PER ACRE.

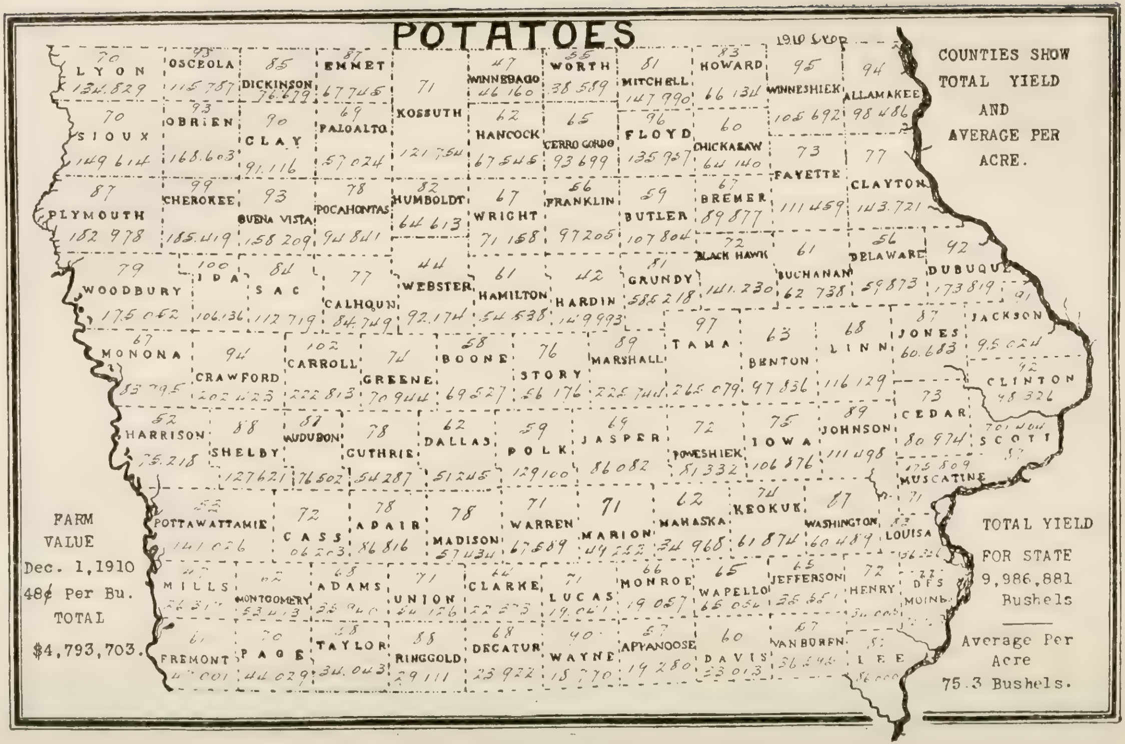
TOTAL YIELD FOR STATE 8,414,541 Bushels.

Average Per Acre 25.9 Bushels.

FARM VALUE Dec. 1, 1911 56¢ Per Bu.

TOTAL $4,712,143


RYE
1910 Crop
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.
TOTAL YIELD FOR STATE 407,058 Bushels
Average Per Acre 13.8 Bushels.
FARM VALUE Dec. 1, 1910 61¢ Per Bu. TOTAL $248,305
LYON 21 690
OSCEOLA 13 80
DICKINSON 19 540
EMMET 32 1565
KOSSUTH 19
WINNEBAGO 15 1232
WORTH 12 786
MITCHELL 18 421
HOWARD 15 777
WINNESHIEK 18 6906
ALLAMAKEE 16 7168
SIOUX 20 300
OBRIEN 16 80
CLAY 21 960
PALOALTO 13 930
KOSSUTH 243
HANCOCK 16 3219
CERRO GORDO 17 2188
FLOYD 12 5610
CHICKASAW 16 2204
FAYETTE 16 8654
CLAYTON 16 15046
PLYMOUTH 14 520
CHEROKEE 12 95
BUENA VISTA 28 690
POCAHONTAS 11 433
HUMBOLDT 20 224
WRIGHT 18 395
FRANKLIN 16 2132
BUTLER 13 22887
BREMER 13 7915
BLACK HAWK 11 20630
BUCHANAN 15 8796
DELAWARE 14 15587
DUBUQUE 17 7542
WOODBURY 23 1150
IDA 30 450
SAC 10
CALHOUN 10 2140
WEBSTER 16 231
HAMILTON 10 420
HARDIN 21 696
GRUNDY 21 680
TAMA 13 1364
BENTON 19 5375
LINN 16 13213
JONES 14 7639
JACKSON 12 7907
CLINTON 16 13051
MONONA 13 1211
CRAWFORD 15 250
CARROLL 21 185
GREENE 30 594
BOONE 17 2598
STORY 14 1175
MARSHALL 18 2364
HARRISON 19 1361
SHELBY 16 767
AUDUBON 14
GUTHRIE 292
DALLAS 17 3011
POLK 15 1978
JASPER 10 1807
POWESHIEK 17 1427
IOWA 15 4848
JOHNSON 15 11910
CEDAR 13 5440
SCOTT 16 27242
MUSCATINE 11 33718
POTTAWATTAMIE 16
CASS 19 902
ADAIR 11 1233
MADISON 13 621
WARREN 14 3651
MARION 11 16796
MAHASKA 13 2692
KEOKUK 14 4823
WASHINGTON 15 1994
LOUISA 12 1676
MILLS 13
MONTGOMERY 19 330
ADAMS 14 586
UNION 14 455
CLARKE 12 275
LUCAS 10 577
MONROE 11 555
WAPELLO 14 2241
JEFFERSON 15 2666
HENRY 11 4355
DES MOINES 10 1797
FREMONT 15
PAGE 18 3095
TAYLOR 11 453
RINGGOLD 14 618
DECATUR 10 1575
WAYNE 17 1076
APPANOOSE 10 1264
DAVIS 12 2307
VANBUREN 14 2397
LEE 12 15251


POTATOES

1910 Crop
70 LYON 134.829
93 OSCEOLA 115 787
85 DICKINSON 76.679
87 EMMET 67 745
71 KOSSUTH 121 754
47 WINNEBAGO 46 160
55 WORTH 38 589
81 MITCHELL 147 990
83 HOWARD 66 134
95 WINNESHIEK 105 692
94 ALLAMAKEE 98 486
70 SIOUX 149 614
93 OBRIEN 168.603
90 CLAY 91.116
69 PALOALTO 57 024
62 HANCOCK 67 545
65 CERRO GORDO 93 699
96 FLOYD 135 957
60 CHICKASAW 64 140
73 FAYETTE 111 459
77 CLAYTON 143.721
87 PLYMOUTH 182 978
99 CHEROKEE 185.419
93 BUENA VISTA 158 209
78 POCAHONTAS 94 841
82 HUMBOLDT 64 613
67 WRIGHT 71 158
56 FRANKLIN 97205
59 BUTLER 107 804
67 BREMER 89 877
72 BLACK HAWK 141.230
61 BUCHANAN 62 738
56 DELAWARE 59 873
92 DUBUQUE 173 819
79 WOODBURY 175 052
100 IDA 106.136
84 SAC 112 719
77 CALHOUN 84.749
44 WEBSTER 92.174
61 HAMILTON 54 538
42 HARDIN 149993
81 GRUNDY 585 218
97 TAMA 265 079
63 BENTON 97 836
68 LINN 116 129
87 JONES 60.683
91 JACKSON 95 024
67 MONONA 53 795
94 CRAWFORD 202 423
102 CARROLL 222 813
74 GREENE 70 944
58 BOONE 69 527
76 STORY 56 176
89 MARSHALL 225 744
92 CLINTON 48 326
52 HARRISON 75.218
88 SHELBY 127621
87 AUDUBON 76 502
78 GUTHRIE 54 287
62 DALLAS 51 245
59 POLK 129100
69 JASPER 86082
72 POWESHIEK 81 332
75 IOWA 106 876
89 JOHNSON 111 498
73 CEDAR 80 974
SCOTT
175 809 MUSCATINE 71
POTTAWATTAMIE 141 026
72 CASS
78 ADAIR 86 816
78 MADISON 57 434
71 WARREN 67 589
71 MARION
62 MAHASKA 34 968
74 KEOKUK 61 874
87 WASHINGTON 60 489
83 LOUISA
MILLS
MONTGOMERY 53 413
68 ADAMS
71 UNION
CLARKE
71 LUCAS
66 MONROE 19 057
65 WAPELLO 65 054
65 JEFFERSON
72 HENRY
DES MOINES
61 FREMONT
70 PAGE 44 029
58 TAYLOR 34.043
58 RINGGOLD 29 111
68 DECATUR 23 922
40 WAYNE 18 770
57 APPANOOSE 14 280
60 DAVIS 23 013
67 VAN BUREN
LEE

COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.

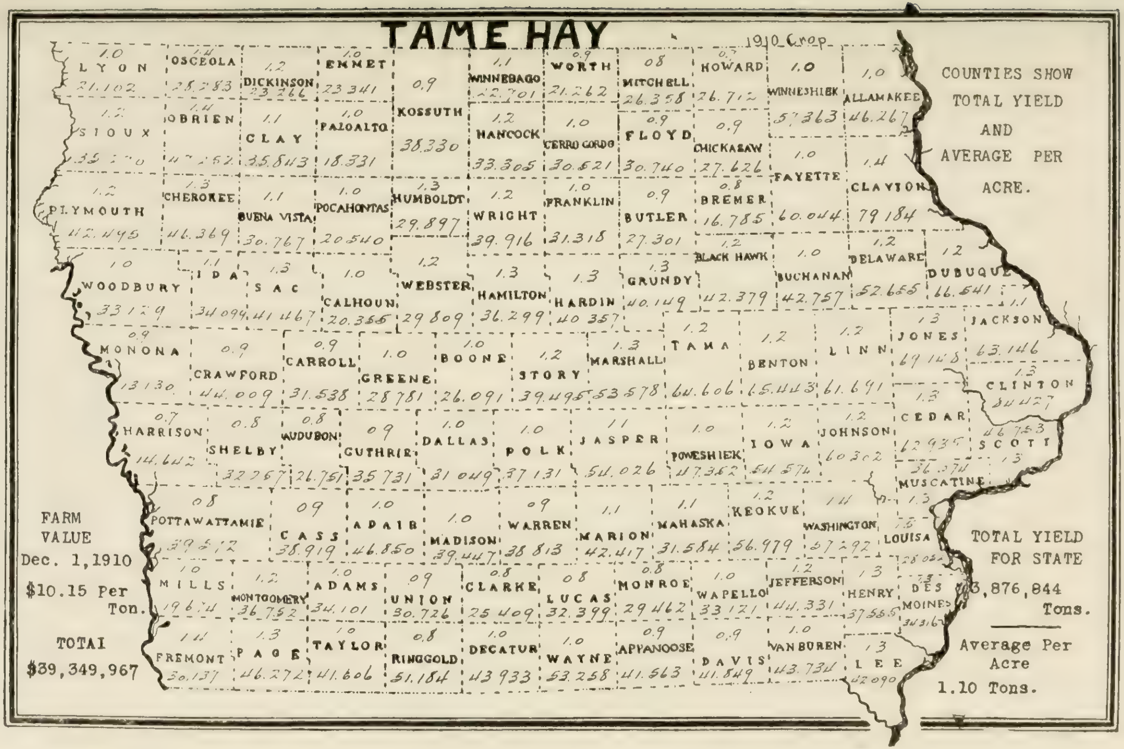
FARM VALUE Dec. 1, 1910 48¢ Per Bu. TOTAL $4,793,703.

TOTAL YIELD FOR STATE 9,986,881 Bushels

Average Per Acre 75.3 Bushels.

TAME HAY

1910 Crop


LYON 1.0 21.102
OSCEOLA 1.4 28.283
DICKINSON 1.2 23.266
EMMET 1.0 23.341
KOSSUTH 0.9 38.330
WINNEBAGO 1.1 22.701
WORTH 0.9 21.262
MITCHELL 08 26.358
HOWARD 0.7 26.712
WINNESHIEK 1.0 57.363
ALLAMAKEE 1.0 46.267
SIOUX 1.2
OBRIEN 1.4
CLAY 1.1 35.843
PALOALTO 1.0 18.331
HANCOCK 1.2 33.305
CERRO GORDO 1.0 30.621
FLOYD 0.9 30.740
CHICKASAW 0.9 27.626
FAYETTE 1.0 60.044
CLAYTON 1.4 79 184
PLYMOUTH 1.2 42.495
CHEROKEE 1.3 46.369
BUENA VISTA 1.1 30.767
POCAHONTAS 1.0 20540
HUMBOLDT 1.3 29.897
WRIGHT 1.2 39.916
FRANKLIN 1.0 31.318
BUTLER 0.9 27.301
BREMER 0.8 16.785
WOODBURY 1.0 33129
IDA 1.1 34 094
SAC 1.3 41 467
CALHOUN 1.0 20.355
WEBSTER 1.2 29 809
HAMILTON 1.3 36.299
HARDIN 1.3 40 357
GRUNDY 1.3 40.149
BLACK HAWK 1.2 42.379
BUCHANAN 1.0 42.757
DELAWARE 1.2 52.655
DUBUQUE 1.2 66.641
JACKSON 1.1 63.146
MONONA 0.9 13130
CRAWFORD 0.9 44.009
CARROLL 0.9 31.538
GREENE 1.0 28781
BOONE 1.0 26.091
STORY 1.2 39.495
MARSHALL 1.3 53.578
TAMA 1.2 64.606
BENTON 1.2 65.443
LINN 1.2 61.691
JONES 1.3 69148
CLINTON 1.3 34427
HARRISON 0.7 14.642
SHELBY 0.8 32767
AUDUBON 0.8 26.751
GUTHRIE 09 35 731
DALLAS 1.0 31 049
POLK 1.0 37 131
JASPER 11 54.026
POWESHIEK 1.0 47.362
IOWA 1.2 54 574
JOHNSON 1.2 60302
CEDAR 1.3 62 935
SCOTT 1.3 46 753
MUSCATINE 1.3 36 374
POTTAWATTAMIE 08 39.512
CASS 09 38.919
ADAIR 1.0 46.850
MADISON 1.0 39.447
WARREN 09 38 813
MARION 1.1 42.417
MAHASKA 1.1 31.584
KEOKUK 1.2 56.979
WASHINGTON 1.1 57.292
LOUISA 1.5 28 05
MILLS 10 19.614
MONTGOMERY 1.2 36 752
ADAMS 1.0 34.101
UNION 09 30.726
CLARKE 0.8 25 409
LUCAS 08 32.399
MONROE 0.8 29 462
WAPELLO 1.0 33 121
JEFFERSON 1.2 44.331
HENRY 1.3 37565
DES MOINES 1.3 34316
FREMONT 1.4 30.137
PAGE 1.3 46.272
TAYLOR 1.0 41.606
RINGGOLD 0.8 51.184
DECATUR 1.0 43 933
WAYNE 1.0 53.258
APPANOOSE 0.9 41.563
DAVIS 0.9 41.849
VAN BUREN 1.0 43.734
LEE 1.3 42090

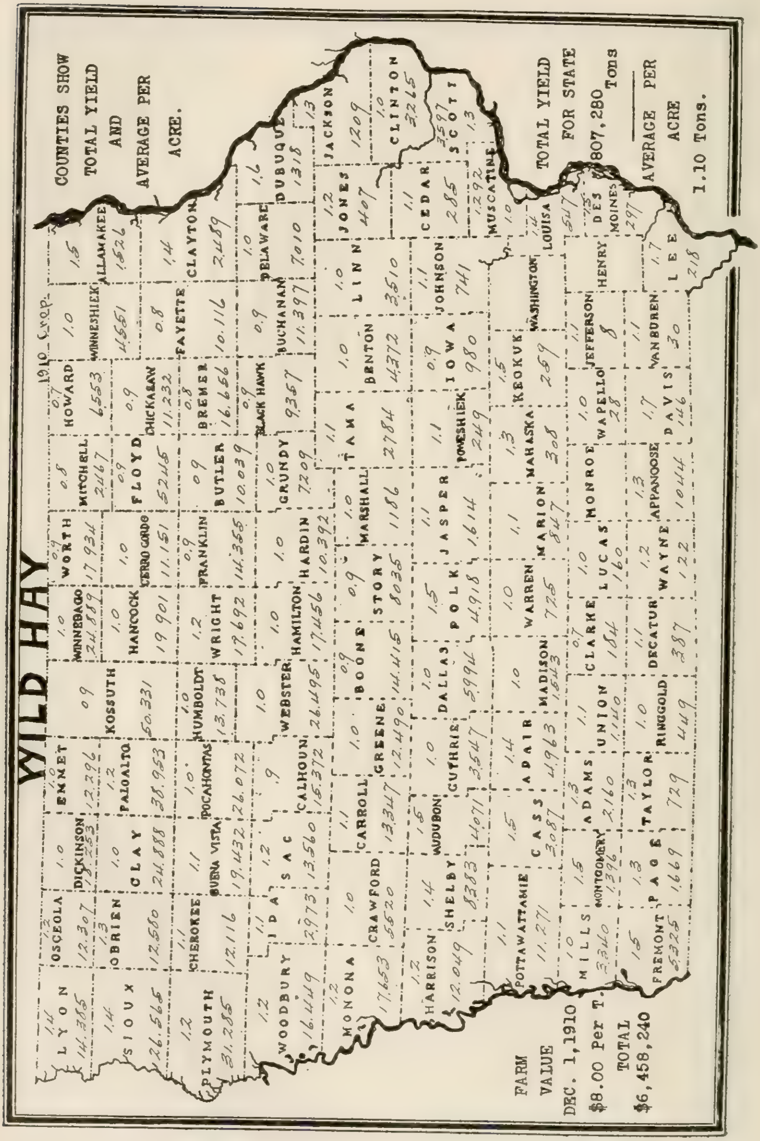
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.

TOTAL YIELD FOR STATE 3,876,844 Tons.

Average Per Acre 1.10 Tons.

FARM VALUE Dec. 1, 1910 $10.15 Per Ton.

TOTAI $39,349,967


WILD HAY
1910 Crop.
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.
TOTAL YIELD FOR STATE 807,280 Tons
AVERAGE PER ACRE 1.10 Tons.
FARM VALUE DEC. 1, 1910 $8.00 Per T.
TOTAL $6,458,240
LYON 1.4 14,385
OSCEOLA 1.3 12,307
DICKINSON 1.0 17,253
EMMET 1.0 12,296
KOSSUTH 0.9 50,331
WINNEBAGO 1.0 24,889
WORTH 0.9 17,934
MITCHELL 0.8 2467
HOWARD 0.7 6553
WINNESHIEK 1.0 4551
ALLAMAKEE 1.5 1526
SIOUX 1.4 26,565
OBRIEN 1.3 12,580
CLAY 1.0 24,888
PALOALTO 1.2 38,953
HANCOCK 1.0 19,901
CERRO GORDO 1.0 11,151
FLOYD 0.9 5245
CHICKASAW 0.9 11,232
FAYETTE 0.8 10,116
CLAYTON 1.4 2459
PLYMOUTH 1.2 31,285
CHEROKEE 1.1 12,116
BUENA VISTA 1.1 19,432
POCAHONTAS 1.0 26,072
HUMBOLDT 1.0 13,738
WRIGHT 1.2 17,692
FRANKLIN 0.9 14,355
BUTLER 0.9 10,039
BREMER 0.8 16,656
WOODBURY 1.2 16,449
IDA 1.1 2973
SAC 1.2 13,560
CALHOUN .9 15,372
WEBSTER 1.0 26,495
HAMILTON 1.0 17,456
HARDIN 1.0 10,392
GRUNDY 1.0 7209
BLACK HAWK 0.9 9357
BUCHANAN 0.9 11,397
DELAWARE 1.0 7010
DUBUQUE 1.6 1318
MONONA 1.2 17,653
CRAWFORD 1.0 5620
CARROLL 1.1 13,347
GREENE 1.0 12,490
BOONE 0.9 14,415
STORY 0.9 8035
MARSHALL 1.0 1186
TAMA 1.1 2784
BENTON 1.0 4372
LINN 1.0 3510
JONES 1.2 407
JACKSON 1.3 1209
CLINTON 1.0 3265
HARRISON 1.2 12,049
SHELBY 1.4 8383
AUDUBON 1.5 4071
GUTHRIE 1.0 3547
DALLAS 1.0 5994
POLK 1.5 4918
JASPER 1.1 1614
POWESHIEK 1.1 249
IOWA 0.9 980
JOHNSON 1.1 741
CEDAR 1.1 285
SCOTT 1.3 3597
MUSCATINE 1.0 1,292
POTTAWATTAMIE 1.1 11,271
CASS 1.5 3087
ADAIR 1.4 4963
MADISON 1.0 1,643
WARREN 1.0 775
MARION 1.1 847
MAHASKA 1.3 308
KEOKUK 1.5 259
WASHINGTON
LOUISA 1.4 547
MILLS 1.0 3340
MONTGOMERY 1.5 1,396
ADAMS 1.3 2160
UNION 1.1 1,140
CLARKE 0.7 184
LUCAS 1.0 160
MONROE 1.0
WAPELLO 1.0 28
JEFFERSON 1.1 8
HENRY
DES MOINES .75 297
FREMONT 1.5 5325
PAGE 1.3 1669
TAYLOR 1.3 729
RINGGOLD 1.0 449
DECATUR 1.1 387
WAYNE 1.2 122
APPANOOSE 1.3 1044
DAVIS 1.7 146
VAN BUREN 1.1 30
LEE 1.7 218

PART IV

PROCEEDINGS

OF THE

Joint Session of the Annual State Farmers' Institute and Corn Belt Meat Producers Association

HELD AT

The Convention Room of the Savery Hotel, Des Moines,
Iowa, on December 13, 1910

A joint meeting of the State Farmers' Institute and the Corn Belt Meat Producers' Association was held in the convention room at the Savery Hotel, Tuesday, December 13, 1910. The convention was called to order by Mr. A. Sykes, president of the Corn Belt Meat Producers' Association, and the following program given:

Invocation .... Rev. Proudfit
Address by the President of the Corn Belt Meat Producers' Association
A. Sykes
"Design and Contsruction of Farm Buildings".......................
Prof. J. B. Davidson, Ames, Ia.
Addres by Herbert W. Mumford, Professor of Animal Husbandry, Illinois State College
"The Role of American Farmer"............................ H. J. Waters
President Kansas State College of Agriculture.
"How the Grand Champion Steer at the International Live Stock Show was Fed" .... R. J. Kinzer
Professor of Animal Husbandry, Kansas Agricultural College.

Prayer was offered by Reverend Proudfit, of First United Presbyterian church, Des Moines.

President Sykes delivered his annual address, as follows:

Mr. Chairman, Members of the Corn Belt Meat Producers' Association, and Friends: I wish to extend to you all a hearty welcome and to assure you that the officers of this asociation are much gratified to see so many of you here; and in addressing you I wish also to address the hundreds of our members over the state who are not permitted to be with us—and I often think that our members who do not attend these annual gatherings do not realize what they are missing. Many of the members who come here year after year tell me that they would not miss these annual meetings for anything; they say that from both a social and educational standpoint they are far more than repaid what it costs them. And they have come to look forward to them as a sort of reunion with friends and as an educational love-feast, and what I want, if possible, is to inspire many others to attend the next annual meeting, take part in the discussion, and assist in transacting the business of their association. This is an association of stock men and farmers, and it is their duty as well as their privilege to attend these meetings and have a voice and say who shall be their officers and how their association shall be conducted. If they fail to do this they should not criticise the work done by those who do attend.

In presenting this, my fourth, and, I trust, my last annual report to the members of this association, I shall endeavor to be frank with you and give you the benefit not only of my observations but also those of others, because on retiring from the head of your association as president, I want my successor to have the benefit of all the information I can give him.

After my election at the last annual meeting, I at once set about arranging for the winter's campaign, with a view to buildiing up the association. I had invitations from a number of our farmers' institutes to speak to the farmers on the work of the association, and we always had well-filled houses; and in this way we were able to spread the knowledge of the association among a large number of farmers with very gratifying success. And I would like to suggest that our members see to it at once that they arrange with the farmers' institute people for a joint session, as here is where you will secure the most satisfactory results. Then I also held a great many successful rally meetings when not engaged with the farmers' institutes. But on account of the great amount of corn left in the fields, we had to abandon holding meetings the last of February. This cut the winter's campaign very short, and yet it was very satisfactory, as the meetings on the whole were well attended by a loyal and enthusiastic lot of farmers.

At the last annual meeting it was very apparent that there must be a change in the system of collecting dues and securing memberships to the association, as the local officers were getting very tired of going to the members year after year and asking them for their dues. On account of this situation and the great amount of work the association was doing, the officers were hampered for funds with which to meet the legitimate expenses. A number of plans were suggested and discussed, and finally the matter was turned over to the board of directors to work out. At the board meeting the different plans were discussed both pro and con, and disposed of by a motion being passed to turn the whole matter over the

the executive committee to work out a suitable plan for securing memberships and raising funds. The most feasible plan and the one finally adopted by the committee was the five-year membership pledge, of certificate, in which the member pledged himself to pay to the association a stated amount annually for five years. It was the sense of the committee that there should be an equalization of the dues, at least to some extent, between those members who are commonly called grain farmers and renters and those members who are feeding and shipping live stock and receiving the direct benefits from the work done by the association. So, proceeding on this theory, we decided to ask the stockmen to contribute $5.00 annually and the grain farmers $2.00. It was agreed that the only way this plan could be made a success was for the president, in company with a local officer, to call on the farmers and stockmen personally and solicit their membership pledges. So, accordingly, about the middle of May I started out to try out the new plan, and if possible put the association on a more permanent basis.

At the close of the first week's canvass, I was convinced that the plan would prove a success, providing the local men would assist in the work, as where we had gone we found each class of farmers ready to contribute the amounts suggested to carry on the work. The facts are that the farmers have come to look on the association as a permanent fixture as well as a decided necessity, and they are willing to help sustain it.

From the middle of May I have pushed the work whenever I could get the local men to assist me, and the results have been very satisfactory, and I have been able to secure a nice membership. And if the work is properly prosecuted in the future there will be no difficulty in raising funds to maintain the association. In the localities I canvassed under the new plan, I secured ninety per cent of the old members and added about twenty-five per cent new ones.

Now as to what has been accomplished, I will say that the past year has been a very busy one, and the association has accomplished by far much greater results than in any year of its past history. You will remember that at the last annual meeting the Interstate case, in which your association was asking for lower rates on live stock to Chicago, was still pending before the Interstate Commerce Commission; and in February a decision was reached and an order issued by the commission ordering the new rates put into effect in May; so, accordingly, on May 16th a new and lower schedule of rates on live stock went into effect over a large portion of the state. These reductions were not as great as we had contended for, nor as great as we had expected to secure. And there is no doubt in my mind but that the reductions would have been greater had not the Iowa Railroad Commission, which had previously intervened in the case, deliberately betrayed our interests into the hands of the railroads in the way they did. Notwithstanding these influences that had to be met, the reductions in the state amount to something like $100,000 annually. This is certainly a nice saving to the stockmen, and amply repays them for putting their money into the case and making the three years' fight to win.

Besides, the new rates make a much more fair and equitable distribution of the rates over the state, which is a strong point in our favor. The sheep men got the long end of the reduction in this case, as the commission order that the new sheep rates in double-deck cars shall be the same as the cattle rates, and further provided that where a shipper ordered a double-deck car and two singles are furnished instead that they must take the double-deck rate, and that the double-deck minimum, which is 22,000 must apply. It is well for the sheepmen to make a note of this, as the single deck rate is much higher, so if you wish to take advantage of the lower rate, order the double-deck cars.

A similar order regarding the furnishing of single-deck cars where doubles are ordered was made a few years back at the request of this association, by the Iowa Railroad Commission, and applies on shipping your feeding sheep in. The reductions on fat sheep run about ten dollars a car.

Another question of great importance to the stockmen, which was successfully and satisfactorily disposed of through a united effort on the part of the Corn Belt Meat Producers' Association, the Military Tract Live Stock Shippers' Association of Monmouth, Illinois, and a few local commission men at the Union Stock Yards, was the changing of the water at the Union Stock Yards at Chicago from the Bubbly Creek, or sewage water, to the lake water. You will recall that at the last meeting held the question was raised in regard to the kind of water the Stock Yards Company was furnishing, and a number of stockmen testified to the heavy shrinks they were having on their cattle, and stated that the cattle would not drink a sufficient amount of water at the yards to take on anything of a fill—hence their heavy shrinks. Your officers at once began an investigation of the matter and found that there was universal complaint about the heavy shrink from the stockmen. But they were unable to locate the cause, as the use of the sewage water had been kept under cover.

The officers of the Illinois association had already taken the matter up, and at once invited us to join with them to bring about, if possible, a change in the water. This we were glad to do, and when the matter was presented to President Spoor, of the Union Stock Yards, we found him very fair, and he frankly stated that if we could prove to him by actual facts that the Bubbly Creek water was causing us a financial loss, he would give us the use of the lake water—also agreeing to turn off the Bubbly Creek water and turn on the lake water for thirty days, in order to make a test of the matter. So with this understanding, we at once got a letter out to our members, explaining the matter, and asking them to weigh their cattle at home and keep an accurate account of the shrinkage for the next thirty days, while the lake water was being used, and make comparisons with their shrinks under the use of the sewage water, and report. When the reports began to come in, the difference in the shrink in favor of the lake water was greater than we had expected, as the average reduction in shrink was about twenty-five per cent, and in the eastern part of the state the reduction was forty per cent. This is a very convincing argument. At the end of thirty days another conference was held with the stock yards people, and the facts submitted to Mr. Spoor. At this meeting we again received the assurance that the lake water would be continued at least for some time, and if they decided to make the change back to the sewage water they would give us another hearing before the change was made. After this meeting, I at once sent out another letter, asking the members who were shipping to write Mr. Spoor personally, and give him their experience in regard to their shrink, and insist on a continuance of the use of the lake water. This no doubt aided greatly in bringing about a satisfactory settlement of the matter, as inside of thirty days I receive a letter stating that Mr. Spoor had decided to continue the use of the lake water indefinitely.

In the changing of the water at the stock yards, it is difficult to estimate the saving to the stockmen. Some shippers have placed the saving as high as $25 to $35 per car, while the general opinion is from $20 to $25. We all know the value of good, pure water if we want our stock to fill well, and I do not hesitate to say that our cattle fill better on the lake water than on any water we have ever had there. And in this public way I wish to express our appreciation for the work done in bringing about this change in the water by our friends of the Illinois association and those few commission men who were so loyal to our interests, and to thank them one and all for the same.

The next matter taken up, which was important not only to our members but to the whole state, was forced upon us by the railroads serving notice that they would make a general advance in freight rates through the middle west and extending east to the seaboard, about August first. These advances would not only affect our shipments to Chicago, but would also effect all shipments of live stock, dressed meats and packing house products east of Chicago, so we were in reality getting a double header. In this connection, it will be remembered that this organization for years has urged on congress the necessity of enlarging the powers of the Interstate Commerce Commission, declaring that the commission should have the power to suspend proposed advances in rates until proper hearings could be held and shippers given an opportunity to be heard, and to inquire into the reasonableness of such advances; and it was only during the last summer that we had the satisfaction of seeing some of the things which we had contended for along this line enacted into law, and it ought to be a source of gratification to us to know that the things we have been advocating are attracting the attention of the law makers of the land, and that we have some able defenders of these principles in the federal congress. So during the past summer, as you will recall, after a long and bitter fight, in which the lines were clearly drawn between the representatives of special interests in congress and those men standing for what the people demanded, the Interstate commerce law was amended and the commission given the power to suspend proposed advances in rates, pending an investigation. So after going over the situation carefully, it was decided that the proposed advance in rates was a question of the greatest magnitude of its kind that had ever confronted our people, and that something should be done, if possible, to precent these advances, as it is stated on good authority that the advances, if put into effect, will cost the shippers of Iowa over two million dollars annually. So, accordinly, the commission was asked to suspend the advances, which they did, and arrangements were made with Mr. Thorne, the rate attorney, to go to work on the case. Under an order of the Interstate Commerce Commission the hearing opened in Chicago about August 25th, and it has been almost a continuous hearing ever since—three hearings having been held in Chicago, one in New York, and two in Washington, D. C., each one lasting from one to two weeks. So you can readily see that this is going to be the most expensive case that the association has been mixed up in; but I believe the amount represented in these advances and the principle involved amply justifies the spending of this money, because if the railroads are permitted to make these advances without us contesting their right, we can make up our minds that we are practically at their mercy in the future. Hence the importance of us doing all we can to prevent them.

As already stated, Mr. Thorne has given almost his entire time to this case since about the 25th of August, and we should appreciate the fact that we could secure a man of his ability to represent us at this important hearing.

The last hearing was held in Washington, D. C., the latter part of November, and the case concluded as to evidence, but the final arguments will not be made to the commission until in January. Then it will be some time after that before the commission renders a verdict in the case. So we can only patiently await their decision, resting in the consciousness that we have done our best to protect the people's interest.

Now, as congress has already convened and the Iowa legislature will soon be in session, there are some important measures that I believe this association should call their attention to and urge upon the different bodies. Some may look upon this as being useless, but I want to say that it is through conventions like this that the people speak, and a number of our lawmakers are now listening to hear what the people have to say. And the time has come when men begin to realize that they are elected to serve the people instead of special interests; so I believe we ought to speak, and speak so loud and so plain that they can easily understand what we want, and there should be no uncertain sound as to our position.

The first important matter that I want to call attention to is the necessity for an act providing for a special commerce counsel in this state, whose duty it shall be to look after and take charge of all questions pertaining to freight or passenger traffic, also express or telephone rates, either state or interstate, by which the citizens of this state are effected. I believe that such an officer should be appointed by the governor, but such appointment must be confirmed by both the house and senate; and that he shall have the power to prosecute cases of discrimination or excessive rates, both before the state railway commission and the Interstate Commerce Commission, according to the nature of the rate involved. It must be remembered that the railroads have many very able attorneys in this state to defend their interests and to see that the people don't encroach on their rights; and yet the great state of Iowa hasn't one special attorney to look after its interests in regard to matters of transportation. The urgent necessity for such an officer has been forced upon us in the last six months by the railroads making a determined effort to advance their rates; and had it not been for this association, the people of the state would have had no one to make an effort to prevent these advances. Had this bill been passed by the last general assembly, the people would have now had a special officer representing them at these hearings, and the expense would have been borne by the taxpayers of the state, who, are in fact the interested parties, instead of by the members of this organization. We were defeated two years ago by the railroad influence in the state senate, but I believe the personnel of the senate was changed sufficiently at the last election to give us a working majority. At least I believe we are in a position to make them "go some," as the people have a much better understanding of what we are contending for than they had two years ago. And what we want is a united effort on the part of our members to help us in this contest, as it is simply a contest between the people and corporation influence.

Then there is the question of better service, which, to our stockmen, is much more important than rates, which should be taken up by this association and a determined effort made to improve. It appears that the more the railroads improve their roadbeds and tracks, the poorer service they give the stockmen, and the past winter was certainly the limit in regard to service, as it took from twenty-four to seventy-two hours to reach Chicago from Iowa points, and the stockmen lost thousands of dollars in extra shrink and on account of the cattle becoming stale, being so long on the road. During the winter, I took the matter up with the Iowa Railroad Commission, as under a provision of the law they have supervision over the speed of live stock trains; and instead of them making an investigation and getting both sides of the question, they simply wrote to the different railroad officers and asked for a report on their furnishing of cars and the movement of their live stock trains. The replies seemed to be perfectly satisfactory to the commission as nothing further was done and the service was as bad as ever. However, we must remember that the present commission has great sympathy for our much abused railways. Complaints are already coming in in regard to the poor service, and as the winter advances, it will grow worse. So I feel that we must make a determined effort this winter to have congress pass a measure that will give us relief; but in order for your association to succeed, it must be properly equipped with the necessary information in regard to the actual time these stock trains make from the loading station to Chicago, and this must be furnished by our members who are shipping. So if you want the association to make an effort to improve the service, you must fill out the shippers' reports promptly on each shipment, and mail them direct to the secretary. We cannot transport a large number of men to Washington to testify in regard to the poor service, but we can take a thousand reports made out on that many different shipments;

and if they are carefully made out they will be more convincing than anything else. So let me again urge upon you the importance of filling out these shippers' blanks, or reports.

Then there is the urgent necessity for the passage of some laws relative to the regulation and control of telephone companies. At the present the state has practically no supervision of her telephone companies, and they are handling us about as they please. Competition is almost eliminated; the great Iowa Telephone Company, commonly known as the Bell, has forced almost every competitor out of business in some way or other, and they now have practically the entire field, and are beginning to put the screws to us, both in cost and in the kind of service they give; so I think we should urge upon the coming general assembly the necessity for proper laws regulating and controlling this gigantic trust.

There is another question of vast importance to our Iowa farmers that I believe this association should urge upon congress, and that is the question of federal inspection of grains at the great terminal markets. That the present system is nothing short of robbery under the cloak of inspection, there is absolutely no doubt, and the farmers are robbed of hundreds of thousands of dollars by the rotten system now employed in the inspection of their grains.

Millions of bushels of grain are shipped into these terminal elevators, from the farmers, and either declared to be no grade or are graded No. 3 or No. 4, and when it is re-sold the same grain is advanced from two to three grades, thus increasing the value from 5 to 15 cents per bushel, all of which advance the farmers should have received when they sold their grain. There is no good reason why we should not have federal inspection of our grain and protect our farmers' interests. So I would recommend that this association in a strong resolution urge upon congress the importance of passing a bill requiring federal inspection of grain.

Then there is the question of ship subsidies that is still pending and we do not want to lose sight of the fact that it is liable to be forced upon us at any time. In my last annual address, I called attention to the fact that the Standard Oil interests and the great American packers had gone into the Argentine Republic to develop their live stock industry so as to secure cheaper meats for the American trade. Recent developments have proven this to be true, and in my opinion it will not be many years until live beef cattle and dressed meats will be imported from the Argentine into this country, and indications are that in the near future there will be a determined effort made to pass a ship subsidy bill so as to give the packers the benefit of subsidized shipments. So, in view of these facts, I believe this association should go on record as opposing ship subsidies in any form.

While our members are feeling gratified over the good work that has been accomplished, it is well for them to understand that there is a movement on foot among some of the live stock exchanges to again advance the commission charges.

It will be remembered that during the existence of the Co-operative Commission Company the stockmen were frequently warned against this and other arbitrary rules being passed by the livestock exchanges if the Co-operative was forced out of business, and now we already have those predictions verified, for the stockmen's commission company was not out of business more than six months until the agitation was started for higher commissions, and the probabilities are that increases along other lines will be agitated. The live stock exchanges have become something like our railroads—every time their members make up their minds that they need a little more cash for their own personal convenience, they simply boost the commissions or make some other move, and the stockmen pay the bills. I simply call your attention to the matter, and it is for you to take whatever action you see fit.

And now I wish to say a few words for the benefit of our railroad friends, that they may know just where we stand and the position we occupy toward them.

It has been repeatedly charged that this association is continuously fighting the railroads and fighting to secure rates that we are not entitled to. This charge is not only unfair, but it is absolutely false, as the association has always held that it wanted to be perfectly fair to the railroads, and believed that they should be allowed a fair and reasonable return on the money actually invested; but what we are opposed to is the holding up of the shippers by excessive freight rates in order to pay dividends on the millions of dollars of watered stock that does not represent a dollar of actual investment.

Then, we have also contended that Iowa farmers and stockmen were entitled to as low rates as those given by the railroads for a like service in other states. In other words, what we have contended for was a square deal from the railroads for the Iowa farmer, and we shall not be satisfied with anything short of this.

I believe that the railroads have no place in our state politics, and that their lobbyists should be barred from our legislative halls. That when measures are being considered by committees in which their interests are effected, they should be given hearings the same as other iinterested parties, and that they should then be barred from lobbying in the legislature while such measures are pending. The sooner railroad men learn that the people have made up their minds that they will have a voice in questions pertaining to railroad regulation, the better it will be for them. And I think the recent election should teach them a lesson along this line as the railroads did everything possible to defeat Mr. Thorne for railroad commissioner, and yet he had as big a majority as the man that they backed all through the campaign. Railroads are a great necessity, and we don't wish to do anything that would impair their usefulness, but they should learn that they are the servants and not the masters of the people.

Now a few words in regard to the many write-ups the officers of your association received during the past year in the different newspapers, ostensibly in the interests of the Iowa packers. Your officers have been charged with being in league with the Chicago packers and receiving "hand-outs" from them; they have been charged with running an independent packing plant at Chicago and penalizing the members of the Corn Belt Meat Producers' Association if they failed to ship their stock to the Chicago plant; they have been called "grafters" and "dopesters" and everything but gentlemen. And why? Just because they made a fight to give Iowa farmers as reasonable freight rates as those given to farmers of other states for a like service. They even went so far as to publish and circulate a pamphlet that was chock full of false statements and misrepresentations by one who styles himself as being familiar with the facts—for the purpose of berating and lambasting your officers. But it was all done under the guise of protetcing the Iowa packer. Now let us see how much the Iowa packer is willing to help the Iowa farmer.

The first move made by this association to give Iowa farmers and stockmen fair rates was during the winter of 1907, when a petition was filed with the Iowa Railroad Commission, asking for a reduction on live stock shipped within the state. Before opening the case, your officers communicated with the Iowa packers, and asked them to join in the case, on the theory that lower rates within the state would help their business. But, to the surprise of your officers, they received no encouragement from the packers, so they proceeded to prosecute the case alone, and secured a reduction of eighteen per cent on cattle and sheep within the state. This certainly redounded to the benefit of the local packers, but so unappreciative were they of the work done that when the assocaition undertook to secure as reasonable rates from Iowa points to Chicago on live stock as stockmen in other states were receiving, the Iowa packers at once joined hands with the railroads to prevent any reduction in rates. Towards the close they became uneasy of the outcome of the case, and opened fire on the association through the newspapers, and attempted in this way to arouse public sympathy in their favor so they might prejudice the case in the minds of the Interstate Commerce Commission —for it must be remembered that the Iowa commission had already fallen a victim to their seductive pleadings and passed a resolution—a copy of which was secured by the packers and the railroads—which resolution was very damaging to the case.

Now this seems like a very strange procedure on the part of the packers to secure the co-operation of the live stock men in building of the Iowa packing business. The facts are that any reduction that this association might have hoped to receive on hogs could not have affected the Iowa packers, and it looked like the packers simply joined hands with the railroads so they might help fight their battles and protect their interests; and that it was a very diplomatic scheme to create public sympathy in favor of the railroads no one can doubt.

Now as to the attitude of this association towards the Iowa packer, I want to say once for all that it is not opposing in any way their interests. But we do not propose to build up the Iowa packer at the expense of the Iowa farmer. The management of the Iowa packing houses has been such that they do not attempt to compete with the Chicago market in price, even after the extra freight and commissions are added. If our Iowa packers will buy their hogs on the Chicago market, less the freight and other charges that are there added, they will have no difficulty in securing all the hogs they can use. If they fail to do this, as they have in the past, they must not get "sore" at the farmer.

I have had occasion to visit the farmers in the localities surrounding the different packing plants in the state, and have made careful inquiry of them as to where they ship their hogs, and they invariably tell me to Chicago; and when I have asked them why they do not patronize their local packers, their reply is because they can't get the price. They tell me they receive from 10 to 20 cents per hundred more for their hogs in Chicago, and the dockage and fill is much more satisfactory. With these conditions existing, is it any wonder that the farmers don't patronize the Iowa packer?

Now I have gone into this matter quite fully, so that the farmers may have a better understanding of the controversy between the officers of this association and the packers, and may be in a position to judge for themselves as to who was in the right. We are all in sympathy with the local packers and want to see them succeed and would be gratified to see many more packing plants doing business in the state. But I do not believe that such methods of abuse as have been resorted to by the packers in this case will ever build up their business and make it a success. If the Iowa packer can not successfully compete in price with other markets, and allow the farmer to have as reasonable rates as farmers in other states are given, they had better inquire into where the difficulty is in the conduct of their business, for it is not with the farmers; and they can not build up their business by berating and ridiculing the men who are protecting the farmers' interests.

Now, in concluding, I want to call your attention to the future of your association. You will recall that at your last meeting the future of the association was not as bright as it might have been. We were behind some $700 in our expenses, and many of the members were becoming discouraged. At that meeting I made a strong plea for a united effort to save your association from the disastrous fate that has befallen all such farmers' associations in the past. And I believe we all went home with a determination to save the association and put it on a more permanent basis. And I am glad to be able to report to you that our efforts have succeeded, and that your officers can now make a favorable report on the condition of the organization, in view of the heavy expenses connected with the recent hearings on the proposed advances in rates, and this is due wholly to the change in the system of securing memberships, and collecting funds for the work. Had we continued under the old system it would have been impossible to have recovered ourselves. Now we have made a start towards putting the association on a practical business basis, and if the work is prosecuted as it should be, you can have an organization that will be a power in the state inside of the next two years. But this must be done by personal work among the farmers, as no other plan will succeed. Men are willing to contribute of their means to support this association if they are solicited and the matter explained to them. But I believe we are wasting our time if we attempt to do the work in any other way. Assuming that this work will be continued by my successor, I want to say a few words in his behalf to the local men, who must assist him in the canvass if he succeeds. It will take some of your time, and this will mean a sacrifice to you. But unless you are willing to make that sacrifice, he cannot succeed. And remember that when you are helping him you are building up an association that is protecting your interests—therefore you are helping yourself. Don't expect your president to go out among strangers and solicit memberships as he would sell farm machinery, for he is handling a different proposition, and he would be looked on with suspicion; he cannot succeed without a good local man with him. So please remember this, when he asks you to assist him to canvass your farmers.

But there is one danger to your association at this juncture that I want to warn you against at this meeting, and that is the danger of your members lapsing into a sort of belief that the association is now over the hill, and that it will succeed without them making any further sacrifice to boost it. Just as sure as they do this, your association will dwindle away and die, as it is only through a united effort of all that it will continue to grow. The splendid work done by your organization is commending itself to sober, thinking farmers everywhere—and why not? It has taken the despised farmer—as it were—who was supposed to wear nothing but blue overalls and cowhide boots, and to never get the hayseed combed out of his hair, and has placed him in the front rank in the state; and now, after seven years of hard fighting, all other classes take off their hats and hail the Iowa farmer. It has proven to the railroads that the farmers have rights as well as great corporatins. It has taken a hand in cleaning up our politics, so that the people's rights are now protected against corporation's greed. It has become a recognized power in defending and protecting the farmers' interests. In short, it is the one organization above all others that stands for a building up of the farmer and stockman and a square deal for all.

With these undisputed facts so vividly in our minds, we should all make a more determined effort than ever to push the association during the coming year.

Now just a little resume of my work for the association during the past year, as it has been a very busy one for me. During the winter I held a meeting every day when the weather would permit, and was also doing all I could to improve the service for the stockmen. And then toward spring I took up personally the question of the water at Chicago, and began to work on it. Then in May I commenced the canvass for five-year memberships under the new plan, and pushed that with all my might during the balance of the year. I have traveled 12,000 miles by rail and about half that distance with team and automobile. I have attended conferences and hearings where your interests demanded my assistance, and have conscientiously endeavored to discharge my duty and protect your interests. I have given you all of my time and the best there was in me to build up your association. As to how well I have succeeded and how near I have met your expectations, I leave it to you to decide. But before I close, I want to call your attention to my expense account for the past year. You will notice when the secretary makes his report that this account is about double what it has been for the preceding years. This increase is brought about by my working all the year instead of just during the winter months, as in the past. And in this connection I want to state that in many localities where I worked, the local men who were boosters in the association had their own autos and took us around, and made no charge, which fact I believe deserves special mention, for they not only saved the association many dollars, but they showed their faith by their works. Others drove us with their teams when the roads were too soft to use an auto. Thus all were ready to do their part in the good work, for which they deserve our hearty thanks.

Our interstate rate case was won largely through the unselfish devotion of our attorney in the case, Mr. Thorne, and I am sure I voice the sentiment of all when I extend in this public way our hearty thanks to Mr. Thorne.

Then there is that old, staid and true veteran defender of the farmers' rights and interests—Uncle Henry Wallace, and his valuable paper, Wallace's Farmer, that has had a conspicuous part in creating sentiment in favor of your association and building it up; and I wish to make special mention of them and to extend to them our most hearty thanks.

And also to all other papers—the names of which are too numerous to permit of personal mention—which have in any way assisted in the good work, we extend our thanks.

Then there is the loyal band of local workers over the state, who have given freely of their own time and sacrificed their own interests in order to perpetuate the association, and to whom your association owes its very existence; and we want to say: Thank you, one and all, and may God bless you all and abundantly recompense you in the future.

Now, just a parting word from one who loves you and the cause you have espoused, and believes firmly in the righteousness of our cause. Let me say to you all, buckle on the armor afresh, and let us go forth the coming year determined to make this the greatest organization of its kind this state has ever seen. Then, and then only, will we see victory perched upon our banner.

I thank you.

Professor J. B. Davidson, of the Iowa Agricultural College, was then introduced, and addressed the convention as follows:

THE DESIGN AND CONSTRUCTION OF FARM BUILDINGS.

PROF. J. B. DAVIDSON, AMES, IOWA.

The design and construction of farm buildings is an important subject with all those directly interested in agriculture, and one which is worthy of much greater consideration than is usually given to it. It will not be possible for me to treat the subject except in a general way for at least two reasons; first, the subject is too large for the time allotted to me, and, second, the science of farm building design is undeveloped, and is one of the problems of the day.

Viewed from any standpoint, farm building design and construction must occupy an important place with those interested in agriculture, if thought be given to the subject but for a time. Consider first the capital invested in farm buildings. For the United States it is necessary to refer to the twelfth census report, the complete data from the thirteenth census not yet being available.

The fixed capital of farms is divided by the 1900 census into land, buildings, implements and machinery, and livestock. The relative importance of these is indicated from one standpoint by the percentage which each bears to the whole:

Land	59.9 per cent
Buildings	21.4 per cent
Livestock	15.0 per cent
Implements and machinery	3.7 per cent
	100.0 per cent

It is to be noticed that the value of farm buildings exceeds that of all livestock, and is equal to about one-third of the value of the land.

The 1907 Year Book for Iowa gives the values of the various properties for the state as follows:

Value of land	$1,552,106,448 or	69.7 per cent
Value of buildings	303,750,975, or	13.4 per cent
Value of livestock	340,826,266, or	15.1 per cent
Value of farm machinery	41,232,368, or	1.8 per cent

The preliminary report of the thirteenth census has been announced and furnishes values which differ widely from those given above:

	1910	1900
Value of land	$2,799,025,000	$1,256,752,000
Value of buildings	454,694,000	240,803,000
Value of implements and machinery	95,273,000	57,961,000

Although the value of buildings has practically doubled during the past ten years, its percentage of the total fixed capital of the farms has undoubtedly been lowered on account of the large advances in the value of land.

Too little thought is given to the conservation of labor on the farm by the convenient arrangement of the farm buildings, enabling the work of feeding or the chores to be done with the minimum of effort and time. It would be difficult to estimate the great loss of labor due to the present inconvenient arrangement of buildings now in almost general use. In fact, there are very few farmsteads which can not be criticized from this standpoint.

The loss of labor from an inconvenient arrangement of buildings is so gradual that it is not fully appreciated, but it is accumulative and the aggregate is enormous. Thus, the total distance traveled in walking 300 feet and return four times a day for a year is over 145 miles, and a saving of thirty minutes a day for a year is equal to over eighteen days of ten hours each.

We have succeeded recently in interesting a government investigator in making investigations concerning the distance and time required to do the chores on some of the Iowa farms he has under investigation, and some interesting results are to be expected. To illustrate the great difference to be observed in farmstead plans, I would like to call your attention to the two sketches which I have here. The first of these is the plan of the buildings of a farm with which I am familiar, and it is presented just as it exists at the present time. In doing the morning work upon this farm, tending to the horses, cows, and hogs, it is necessary to walk 2,400 feet outside of the buildings. This may be good morning exercise, but it will be hard to convince the average farmer that he needs it. Besides the inconvenience in doing the morning work, notice how inconveniently placed the garden is from the house. Attention is also called to the position of the well. Instead of being between the house and barn, it is beyond the barn.

Compare this plan with the next. The house is 150 feet from the road, and the barn is 200 feet from the house. Not too close, when located in the right direction. The prevailing winds are either from the northwest or southeast, and the odors from the barn are seldom carried toward the house.

The implement and wagon shed also includes the shop and milk house. If the well can be located near this shop, so much the better, as a gasoline engine can be used to do all the light work at this point. In doing the morning work, a man will only walk 900 feet, a saving of 1,500 feet over the former plan.

It is generally recognized that it is impossible to produce dairy products economically without providing comfortable quarters for the dairy herd. There is no data at hand to show to what extent comfortable quarters will compensate for a reduced ration, yet there is no doubt but what an animal well protected from the cold and wind, and housed in sanitary quarters, not only will produce more, but require a smaller ration. There is much difference of opinion in regard to the need of warm quarters for beef animals. Some investigators have reached the conclusion that the waste heat from the digestive processes furnishes a surplus amount of heat, and warm quarters are not necessary. All agree, however, that protection from wind and wet is essential to economical beef production.

The animal requires the oxygen of the air as much as food. In fact, an animal will live much longer without food than without air. Perhaps nothing has been proven more effective in warding off tuberculosis than good ventilation. In the localities where the animals, especially dairy cows, are not housed for any considerable length of time, tuberculosis is unknown. In like manner, light is also essential in combatting disease.

Good dairy products can not be produced except in sanitary quarters. The milk will become contaminated with foul odors and disease germs unless the barn be dry, light and well ventilated.

In citing various reasons why the design and construction of farm buildings is a subject worthy our best consideration, the design of the farm house and the plan of the home which enter to make the farm a pleasant or unpleasant place to live should not be overlooked. "Farming is not all corn." One function of the farm is to provide a home. If in building the house, it may not only be made convenient and comfortable, but by means of the planting of trees and shrubs, it may be made a place where happy lives are to be passed, it has a far-reaching influence upon the character and ideals of the growing generation—greater than it is possible to estimate.

It is not the purpose of this talk to bore you longer with an effort to prove to you that farm buildings are a large factor in farm economy, farm management and farm life. The design and construction of farm buildings is one of the most neglected branches of agricultural science. The present buildings upon the farm are largely the result of individual effort. If a farmer decides to build a barn, for instance, his opportunities for the study of farm structures are confined almost entirely to his immediate neighborhood. This is evidenced by the fact that types of farm buildings vary by localities to a large extent. There is practically no literature on the subject. Books of plans now in print are largely a compilation of plans prepared by architects for wealthy clients. The plans for the better and more practical buildings are never put upon paper. Contractors and carpenters lend valuable aid in the construction of farm buildings, but they are influenced almost entirely from the standpoint of construction with the least effort, regardless of the uses to which the building is later to be put.

Only a few agricultural college courses contain anything at all concerning farm buildings. This is due largely to the fact that the subject is not in shape to be presented to college classes. Outside of a few bulletins on special types of farm buildings, there is practically no literature upon the subject. Is it not high time that this whole matter receive our earnest attention?

Farm building design and construction must be developed alone. Examples are to be found everywhere of an attempt to take city ideas of architecture to the country, to find out they are entirely out of place. It is becoming more and more realized that whatever is of extreme utility and practicability, coupled with neatness and perhaps plainness, is of good taste. In no place is this so true as upon the farm. Farm bulidings are of good taste if they are perfectly adapted to the uses to which they are designed, and shall bear no meaningless or useless ornaments. It costs no more to build a building of good taste than otherwise, and often when an attempt is made to decorate a building, it is made less pleasing than before.

The matter of good taste is reflected more in farm buildings than in city buildings, because the former stand alone.

Taking up the location of farm buildings, I would invite your attention to the following principles: Perhaps it is not possible to incorporate all of these in one plan, yet a good plan must indicate most of them.

1. Have the buildings near the center of the farm, giving due consideration to other advantages.
2. Needless fences should be avoided on account of first cost and maintenance.
3. A pasture should be adjacent to buildings.
4. Buildings should occupy poorest ground.
5. Buildings should be located in reference to water supply.
6. Buildings should be on a slight elevation whenever possible.
7. A southwest slope is desired.
8. The soil on which buildings are to be placed should be dry and well drained.
9. A timber windbreak should be secured.
10. A garden plot should be near the house.
11. Buildings should not be located on high hills, because of difficulty of reaching from fields or road.
12. Buildings should not be placed in low valleys, on account of lack of air, drainage, and danger of frost.
13. Buildings should be located on the side of the farm nearest the school, church or town.
14. The house should be not less than 100 feet from the highway.
15. The barn should be about 150 to 200 feet from the house, and not in the direction of the prevailing winds.
16. The barn should be in plain view from the house.
17. Lots should be on the farther side of the barn from the house.
18. Several views from the house are desirable.
19. All buildings should serve as windbreaks.
20. The shop and machine shed should be convenient to house, barn and fields.

Two general systems of arranging farm buildings have been developed in this country. For want of better terms, they may be designated as the "distributed" system in which a separate building is provided for each kind of stock or for each purpose to which it may be devoted, and the "concentrated" system, in which everything is placed under one roof as far as possible, or the buildings at least connected. The advantages of the first system may be listed as follows:

1. Greater amount of lot room possible.
2. Different kinds of animals are separated.
3. Less danger from fire.
4. More economical for the storage of certain crops and machinery.
5. Possible to secure better lighting. Wide barns are necessarily dark.

In turn, the following arguments may be advanced for the concentrated system:

1. Economy of first cost. Volume of building is secured with minimum of wall surface.
2. Less expense for maintenance.
3. More economical of labor.
4. Better fire protection can be provided.
5. Manure can be handled to the best advantage.
6. Provides a very imposing structure.

It is to be expected that opinions and tastes will differ as well as conditions, and all these will determine the best arrangement for any particular location. Most farmsteads are the results of growth and development, and for this reason are not what they would be if built entirely at one time. As changes are made and new buildings constructed, it is well to keep in mind the desired features and to approach the ideal as far as possible.

In commercial life it has often been found a matter of good business to dismantle certain buildings designed for manufacture and entirely rebuild the same. There are, no doubt, many farms so equipped that it would be a good business investment to entirely dismantle the existing buildings and rebuild in such a way as to insure a more economic operation.

One feature of farm building construction which has received more attention of late than formerly, is the matter of natural lighting. Not only has the amount of window glass been increased, perhaps beyond a practical amount, but the location of the windows to secure the maximum effect has been given due consideration. These statements hold more nearly true in the case of dairy barns and poultry houses than in other farm buildings.

It is now customary to provide in dairy barn construction one square foot of window glass for every twenty to twenty-five square feet of floor surface. This seems to be adequate when care is used in seeing to it that the entire floor is swept during the day by direct sunlight, and that too much of the light is not intercepted by the window casings.

There is no question relating to farm buildings which is in as unsettled a state as the matter of ventilation. It is recognized generally that men and animals must have fresh air, and the most favorable conditions for life and health are attained when the air is as pure as the open atmosphere. It is not practical to provide air as pure as this to animals housed in a building which is designed primarily as a shelter and for warmth. The standard of purity or to what extent the air of buildings should be diluted down in order to make it fit for breathing purposes, is a question upon which there is no agreement. This must be settled in a more or less definite way before the engineer can work out a ventilating system. It is customary to let the number of parts of carbon dioxide in 10,000 parts of air represent the purity of air. In the open air there are about four parts in 10,000.

De Chaumont, an authority on ventilation, holds that air fit for breathing purposes should not at any time contain more than six parts, and in contrast to this, Professor F. H. King, designer of the common King system of ventilation, maintains that sixteen parts are not too many. It is hoped that experiments will be conducted which will establish a standard of ventilation.

The dilution of air may be secured by four different means:

1. The process of diffusion.
2. The action of winds.
3. The difference in weight of masses of air of unequal temperature.
4.. Mechanical means.

The first of these is made use of in the so-called cheesecloth window ventilators. The observations of the speaker and the recent tests of the Ontario Agricultural College, would both indicate that this is in no sense a true system of ventilation.

The action of the winds is made use of by means of the so-called Sheringham windows—windows that drop back into the building between cheeks, providing an opening at the top through which a current of air may pass. Cowls or cupolas are designed to assist in the aspirating effect of the winds in drawing foul air from the building. At best, the effect of the wind is unreliable for ventilation because it is irregular.

The heating of the air and its consequent expansion is the most successful agent used at the present time to produce ventilation. This is exemplified by the King system of ventilation. Long flues are provided which lead from near the floor to the highest part of the building. In the speaker's opinion, this is the most successful system in use. The success of the system depend upon making the barn warm, the wall air tight, and the flues large and straight.

Mechanical or forced ventilation has not been used to any appreciable extent in barn ventilation, but time will see its general introduction. It is a positive means of ventilation. All the other means mentioned vary so much with atmospheric conditions. There was a time when all buildings were ventilated by other means, but the modern structure has the mechanical, the positive means of ventilation.

The main difficulty lies in supplying power to operate the fan or pump forcing the air into or from the building. The amount of power required is extremely small, but it must be continually in operation. Time will, however, solve the problem.

One striking thing about farm building construction in the past is that very little thought has been given to the matter of permanency or durability. The materials which have entered into the construction of farm buildings have been largely those most available and those with which the local mechanics were the most familiar.

Cement is coming into more general use, and its use is to be highly commended. Concrete construction, when properly handled, is as durable as any material we now have. Its use in farm buildings is not well worked out. The methods used in the large reinforced structures of the city are not well adapted to use in the country.

Another material which, no doubt, is worthy of a more extended use, is vitrified clay building blocks. These introduce no new methods in building construction, they are cheap, and are manufactured quite generally over the state.

In closing, I will say that I expect great development in the science of farm building design and construction. There is a general awakening along these lines, as evidenced by the correspondence to farm papers and to the experiment stations. Development must come, however, from specialists who are endowed with the spirit of the farm as well as fully acquainted with farm practices and farm needs. Farmers in their prosperous years are now able and willing to pay a fee to a rural architect who can furnish full value in a plan of a building. Besides this, I expect the experiment stations to give the subject attention—and why should they not? There are no commercial interests tending to develop farm building design other than those interested in the sale of materials.

AFTERNOON SESSION.

President Sykes announced the following committee on resolutions: R. M. Gunn, Black Hawk county; S. M. Corrie, Ida county; A. L. Ames, Tama county; H. P. Dawson, Cherokee county; J. B. Wardrip, Keokuk county; Warren Nichols, Marshall county; Frank Owens, Iowa county; Geo. C. White, Story county; D. Hogan, Cass county; Frederic Larrabee, Webster county; A. A. Foster, Poweshiek county.

Herbert W. Mumford, Professor of Animal Husbandry, Illinois College of Agriculture, read the following paper:

LIVE STOCK PRODUCTION FROM THE STANDPOINT OF THE CORN BELT FARMER.

PROF. H. W. MUMFORD, URBANA, ILL.

These are days of uncertainty. Agriculture never presented more difficult problems. Farmers were never more clamorous for guidance. Qualified men were never more reticent about prophesying what particular phase of agriculture is likely to prove most profitable, while the "interests" were never more active in promoting their own projects by preying upon the unsophisticated, who have been sidetracked by the present popularity of the "back-to-the-land" movement. The "interests" as here referred to represent those individuals and corporations who are selling everything from garden seeds and books to land, at prices entirely out of all proportion to their value. There never was a time when as many sins were perpetrated in the name of agriculture as now.

With all the uncertainty there are a few facts in relation to agricultural production which are the result of changed conditions. They are fit food for thoughtful minds to juggle with.

Foodstuffs are high in price as compared with former times. The tendency is toward still further advances in the future. Particularly have advances been noticeable in the price of meats. Meat production has not kept pace with the increase of population.

It may be interesting to review briefly some radical changes which have taken and are taking place with reference to the food of the population of the United States.

The savage subsisted chiefly upon game and fish. The first white settlers did likewise. Even the ranchman frequently lived on a diet largely composed of meat. The larger use of cereals, vegetables, and fruit has come with the development of the country and the knowledge of the possibility of successfully growing these foodstuffs. It has come also, I am bound to say, with the more general appreciation of the healthfulness of a mixed diet, as compared with one composed largely of meat. Nor should the science and art of cookery be robbed of its share of credit for this apparent change. I say apparent, because it is doubtful whether statistics are available to prove that the tendency of our people at present is to consume a smaller proportion of meat. Is it not safe to assume that this fact is so apparent that it needs no proof? A lessened per capita consumption of meat, if such there be, is not due primarily to the increased intelligence of the people with reference to dietetics, but to the increased cost of meat. It has increased in price from what was virtually the cheapest article of diet to what is substantially the most expensive. Financial considerations, then, are chiefly responsible for the change. This fact is significant because the producer can, if he will, get an indication of the attitude of the masses toward any particular article of diet. To be sure, the appetite will largely indicate what articles of food will be purchased, provided the disparity in price is not great. But as soon as the price of an article of diet rises to a point where it is clearly relatively high as compared with other foodstuffs which can be substituted for it, there is sure to be a lessened demand for the high-priced article.

Agriculturally speaking, the United States is a new country; at any rate, sufficiently new to have failed to settle into systems of farming which are looked upon as reasonably permanent. This has been inevitable.

The rapid agricultural development of the west by ranchers and homesteaders, the reclamation and railroad projects, have all kept the eastern and middle western farmer busy determining what line of agriculture he ought to follow to secure greatest profits. Our country is, however, now rapidly nearing a stage in its development when production and market conditions will be more stable. Along with this probable fact, the growing intelligence of the farmer is an encouraging factor.

A comprehensive inquiry among farmers throughout the state of Illinois, conducted under the direction of the writer, shows conclusively that on the whole there is a widespread tendency to breed and feed less livestock. What is true in Illinois is true to a lesser extent throughout the corn belt. Briefly stated, the causes which have most largely contributed in bringing about this condition are:

1. For brief periods grain farming has been more profitable than livestock production, because, temporarily, the price of feeds used largely in the production of livestock have been relaitvely higher in price than animal products. These relatively higher prices for grain have caused a

very material extension of grain growing, especially of the acreage devoted to corn. To secure additional areas for corn, farmers have been plowing up old blue grass pastures. Elimination of pastures from a system of farming is quickly followed by a very pronounced reduction in the number of livestock.

2. The most profitable production of meat animals has hitherto been associated with cheap lands. The opportunities for stock raising offered by these cheap lands in various sections of the west, southwest and northwest have lured many successful stockmen from the state. The opportunities of these newer sections as compared with Illinois for the exclusive grain grower have not been equally attractive, hence there has been a tendency for a large exodus of livestock producers, while the grain growers have more largely remained.

3. The great difficulty of securing tenants who have had a successful experience in livestock management tends still further to decrease the number of livestock kept. This is an important consideration, for the impression prevails that there is a strong tendency toward landlordism and tenantry.

4. There has been, and still is, a very general lack of appreciation of the value of farm manure produced by livestock on the farm.

In a country whose agriculture is new there are few agricultural questions which are either difficult or complicated. As an agriculture becomes older, the number of problems arising increase rapidly, and their solution becomes correspondingly difficult. The agriculture of the United States will be very shortly called upon to settle some of the most far-reaching questions which have ever been presented.

No important branch of agriculture has experienced and survived more vicissitudes than livestock production. Farmers have frequently become panicky over it. A suggestion of such a condition now threatens the industry.

As has been noted, there has been a growing tendency to decrease livestock production, and increase grain growing. Reasons for this movement have been stated. The fact should not be lost sight of, however, that some of these causes will not continue to operate with the same force. On the other hand, it is safe to assume that new difficulties will arise. Less than a year ago we called attention to the evident fact that continually increasing the corn area and production without increasing at the same time the production of livestock, would sooner or later have a marked effect upon the corn market. It has come sooner than we anticipated it would. It is a well-known fact that corn production has been rapidly increasing, while there has been a tendency to actually decrease meat production. In this connection, it is a significant fact that eighty per cent of the corn produced in the United States is fed to livestock.

The following reasons may be given for the wisdom of continuing livestock production:

1. Intelligent livestock husbandry is more profitable than grain growing. The multiplicity of kinds and methods of livestock production and the variations in market value both of feeds used and animals involved,

preclude the possibility of presenting here a comprehensive and detailed account of the profit-making possibilities of the business. In this connection, some experimental data of the Missouri Experiment Station, where various forage and grain crops were consumed by hogs, is given as an example. The hogs used in the investigation weighed at the beginning about one hundred pounds. The corn, where used as a supplement to forage crops, was charged against the hogs at sixty cents a bushel; the gains on hogs were credited at $6 per hundred-weight. Nothing was charged for labor, and no credit fiven for fertilizer. An acre of blue grass in the season of 1908, when pastured with hogs at the rate of fourteen hogs per acre, for a period of 140 days, was worth, after deducting the value of the corn used to supplement the pasture, $18.80. An acre of clover pastured by twelve hogs, ninety days, under similar conditions, yielded $37.59; rape, oats and clover, in 1909, ten hogs for seventy-eight days, $22.02; cowpeas, twelve hogs for thirty-two days, $17.71; corn and cowpeas, ten hogs for thirty-two days, $35.40. These figures speak for themselves. Similar work will be conducted at the Illinois Agricultural Experiment Station.

While it is true that at times and under unusual conditions, which have been particularly unfavorable for profitable livestock production, exclusive grain growing has seemed as profitable and in some cases more profitable, it is not true today, nor is it likely to be true until the demand for corn, clover hay, alfalfa and other foods largely used in the production of meat comes into more general use in the human dietary. These crops, admittedly the most natural and profitable on corn belt farms, are suited primarily to livestock production, and as long as they are grown, they, together with the by-products of many other farm crops, will be used largely for livestock production either in this or other states or countries.

Intelligent systems of livestock husbandry are the most profitable systems of farming under conditions likely to prevail for a long series of years, and doubtless indefinitely. Then, too, in considering a question of such significance, only averages extending over a series of years equally favorable to grain growing on the one hand and livestock production on the other should be considered conclusive.

2. Livestock farming furnishes the opportunity to many intelligent workmen for continuous remunerative work in the country. In other words, livestock farming calls for greater intelligence and skill in the farm laborer, while such systems of farming distribute the work to be done more evenly throughout the year. Some systems of livestock farming, especially the more intensive forms, like dairying, furnish a greater amount of work. Looking at the subject from the standpoint of public good, therefore, it would seem highly desirable to encourage systems of livestock production, particularly as population increases.

A system of exclusive grain farming will necessarily find a large place in the agriculture of the corn belt, and no one should rejoice in this fact more than the livestock producer. Exclusive grain growing increases the available supply of feeds used in animal production on the one hand,

and on the other removes increased competition and the probability of an over-production of livestock. It should not be forgotten that livestock husbandry is the most important factor in the corn market. As nearly as can be estimated, eighty per cent of the corn produced in the United States is fed to livestock. Then, too, there are large areas where the production of livestock will long prove not only the most profitable but also practically the only use which can be made of these lands. This is a fact which should not be overlooked in any effort looking toward the development of all agricultural resources. Intelligent systems of livestock production are feasible and profitable not only on lands not adapted for grain growing, but upon lands especially suited to grain growing. If, therefore, an individual adopts a system of exclusive grain farming, he does so from choice, or seeming necessity, and not because systems of livestock farming are not profitable.

3. The keeping of more and better livestock on the farm promotes greater interest in farm life. The tendency for the boys and girls, the young men and the young women, to early leave the farm is a tendency which is universally regretted. I venture to say that no single agricultural reconstruction would increase this tendency more certainly and more rapidly than a general abandonment of livestock husbandry. In other words, eliminate livestock as an important factor in agricultural practice, and you remove forever the most powerful magnet that attracts and holds the brightest and best among our farm-raised young men and young women. An agriculture without livestock is threatened with becoming a business prosecuted by a relatively ignorant class who are not farmers from choice, but because it furnishes as remunerative employment for the laboring man as factory, shop or mine. Do we wish nothing better for American agriculture?

4. If advocates of a system of livestock husbandry could put forth no stronger argument than that it encourages, and, speaking broadly, necessitates the residence of the owner of the farm on the farm, it would indeed be sufficient. I take it that we are interested in the ultimate status of the farmer as a class, as well as the financial possibilities of land ownership. It is a deplorable condition in the trend of the agricultural practice of a state when intelligent and successful farmers forsake their farm homes for town or city, while their farms pass to the control of tenants, whose chief interest is in mining the soil, and who seldom care for the best development of country life.*

5. The highest type of agriculture is not possible without livestock. If the highest type of intelligent citizenship is to prevail in this country, it will rest largely upon the possibility of developing standards of liv-

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*The writer does not wish to be understood as even intimating that all tenants are undesirable citizens. As a matter of fact, there are tenants in Illinois, who, if left to themselves, would better care for the farms they occupy than the owners. It is highly desirable that since a certain per cent of Illinois farms must be occupied by tenants that some serious attention be given to developing tenants who shall be a credit to agriculture, as they are in Great Britain, and not a reproach, as is frequently the case in this country. Lengthening the term of lease will help materially.

ing among country folk which will necessitate systems of agricultural practice that constitute the highest type of agriculture. In other words, it is possible to build up an enduring civilization around systems of farming which do not exclude livestock and which will not only profitably ultilize to the fullest extent the agricultural resources of the United States, but develop an intelligent and influential farming class.

6. While it is true that the fertility of a farm can not be maintained simply by returning to the farm the manure made by livestock fed upon the crops grown on that farm. It still remains true that most systems of livestock farming call for the purchase of less plant food than any system of grain farming.

It would seem, therefore, that the easiest and most logical procedure in developing a permanent agriculture would be to work out a variety of systems of livestock husbandry which would retain as much as possible of the fertility removed in cropping, supplementing whatever lack of fertility there may be by the purchase of mineral fertilizers, or the purchase for feeding purpose of the large supplies of grain produced and bound to be produced by grain farmers. This buying of grain to feed need not be done with the thought of building up the stock farmer's farm at the expense of his neighbor's, but in a public-spirited and economic sense assist in making a good market for the grain produced by those who, for personal reasons, prefer to remain grain farmers, and who may, if they will, keep up the fertility of their lands by plowing under rather than feeding the legumes they grow, and supplementing this method of manuring with whatever mineral fertilizers they find advantageous.

I can not leave this subject without calling attention to the fact that Illinois is selling from the state in her grain crops a very considerable amount of fertilizer.

Exact statistics showing the amount of farm products shipped out of that state and used for manufacturing purposes are not available. It is believed, however, that the amount of corn reserved on the farms for feeding purposes would fall considerably short of fifty per cent of the total production of the state. Illinois produced in 1909 approximately 350,000,000 bushels of corn. Assuming that one-half of this is shipped off Illinois farms, attention is called to the fact that the 175,000,000 bushels so shipped would fatten each year over 2,500,000 steers, or their equivalent in other livestock, and that the fertilizer produced by this feeding would increase the annual possible production of the state $15,000,000.

It is argued that the corn belt is primarily a grain growing section and that its agricultural development lies along grain growing lines. Undoubtedly grain growing is to be a leading and permanent branch of the agricultural endeavor of the corn belt, but there are several systems of livestock farming that are not incompatible with grain growing, and that are necessary for its permanent success. I believe the time will come when it will be considered bad economics to transport numberless carloads and shiploads of grain to far distant lands for feeding purposes. It may be even practically impossible for transportation companies to handle such traffic. Already railroads are having difficulty in handling the present volume of business. The necessity of keeping the cost of foods within reach of the masses that is, at such a level that the laboring man can be well nourished and highly efficient, will eventually demand that the distance between the producer and consumer be shortened.

It is possible, but not at all probable, that livestock production will be overdone as the area that can be devoted exclusively to livestock production is rapidly disappearing.

After all, the considerations that will carry the greatest weight in determining the future farming policy of corn belt farmers will be economic. Agricultural practice will surely gravitate toward the more profitable systems of farming, regardless of whether those systems include or exclude livestock.

I venture to suggest that the livestock producers of the country are not doing and never have done enough in the way of putting livestock production on a sound economic basis. Livestock production no sooner becomes profitable enough to be an attractive financial proposition than it receives a setback due to a variety of causes, some of which are at present beyond the control of the producer.

I do not come to you with a remedy. I do, however, suggest that you continue to give this subject careful consideration, for, unless meat producers, whose chief business it is to protect their own interests, maintain a live and effective organization—an organization which at all times is led and controlled, and whose policies are determined by men who are interested primarily from the producer's standpoint—meat production, as a leading factor in American agriculture, will gradually decline.

As we study the situation with a view to future prospects of the business, a few facts are worthy of our best thought. Some of these are encouraging; some are discouraging.

As yet, railroads, stock yard companies and packing interests—in other words, the manufacturing and distributing agencies involved in the meat trade—have done mighty little in encouraging livestock production in a way which looks to making it a permanently profitable enterprise of the corn belt farms. I say this not in the spirit of criticism, but with a view of calling attention of these interests to an undeveloped opportunity, an underworked field of endeavor. They have pursued a short-sighted policy, if, indeed, they have had a policy, that disregards the permanency of the best agricultural development of the whole country.

An early recognition of the interests of the meat producers of this country and the adoption of policies which will materially assist in placing meat production on a conservatively profitable basis will surely augment their prosperity.

I have not overlooked the fact that the interests referred to have made some attempts to encourage livestock production, but they have not looked to the permanency of the business; they have been thinking primarily of their own immediate profit.

The time will come when the producer will be looked upon as the most necessary factor. The producer is fast becoming sufficiently intelligent to cease to be a producer of anything which is produced at a loss.

Meat production will never occupy a permanent place in American agriculture until it is placed upon a more stable basis.

The clamour of the consumer for cheap meat gets a more ready audience than the cry of the producer for a reasonably certain profit.

The writer does not overlook the fact that the widespread demand for meat by the masses will depend largely upon the price of meat as compared with other articles of food. It is for the interest of the producer, therefore, that meat be sold over the block at as low a price as is consistent with allowing every necessary factor in the trade a reasonable profit. If there are unnecessary factors in the trade, and if any necessary factor is getting too large a proportion of profit, these facts should become common knowledge, and some way should be found to eliminate them and distribute the profits. These are matters for careful investigation. Producers do not possess enough facts upon which to base intelligent action.

Is it not safe to assume that the meat producer does not ask to be subsidized? Nor does he demand an unreasonable profit. His chief difficulty is that in the present disorganized condition of the meat producing industry, he can not insist on or demand anything, not even his rights. If he profits by his ventures, he takes it as a streak of good luck; if he loses, he grumbles some, but finally accepts it as inevitable. These losses have been getting more common, and hence the general tendency is away.

How can we consistently advocate more general livestock production when it takes the expert to come anywhere near hitting the high point of the market? We find a strong market prevails for a limited time only, to be followed by a prolonged dull market, these changes frequently occurring without the certain argument of an increased demand and short supply, or vice versa. To be sure, the producers are sometimes at fault in precipitating or at least aggravating these conditions; but not always. Producers could here plan to be as well informed as to supply and demand as other interests are.

In my judgment, the problem of making it possible to produce profitably in the corn belt a large amount of meat, that can be sold at a price which the masses can afford to pay, is a larger question than that of improving our export demand, as helpful as that may be. It will not be long before it will be a very live question whether the stockmen of this country wish to permit meat grown on the cheap lands of other countries to compete with their products in the markets of the United States. I refer to meats bound to be produced in large quantities in Argentina, Uruguay, Paraguay, Brazil and farther north countries of South and Central America.

Consumers must sooner or later reconcile themselves to at least the present scale of prices for meats. In other words, the era of cheap meats has passed. With the rise in price of meat, consumers in the United States will clamour for the opportunity to purchase the cheaper meats of those countries. Bear in mind that there will be no one who will be particularly concerned except the meat producer. Not the packer; because he is fast becoming the principal factor in the meat trade in these newer sources of meat supply. Not the retailer; because he will be able to realize as great a profit on foreign meat as on the domestic product. This, then, is essentially a problem for the producer. But I must not dwell longer on these facts.

It can not be too strongly emphasized that the importance of livestock production as a means of maintaining agricultural prospertiy is clearly indicated by the history of nations. A mere comparison of the types of farmers found in England, Scotland, Denmark and Holland with the peasant wheat-growers of Russia or with the wheat and rice farmers of India, is sufficient to illustrate the close relationship between livestock and agricultural progress.

Livestock production necessitates rotation of crops and frequent seeding down. It requires activity and skillful management the year around. It compels the farmers to observe market conditions. It brings him in contact with men both as a buyer and as a seller. It enlarges his heart, and broadens his sympathies beyond the routine of sowing, cultivating and reaping.

Grain farming, on the other hand, leads to continuous cropping without proper rotations. It eliminates meadows and pastures. It involves the strenuous life for a short season of the year, followed by a long period of inactivity. It creates an itinerant laboring class and stimulates tenantry rather than permanent farm homes. It fosters the land-robbing spirit. Corn farmers, wheat farmers, cotton farmers, rice farmers, grain farmers as a class, are strongly led to overdraw their soil fetility account, for most men engaged in exclusive grain growing manifest small interest in a permanent agriculture. The history of agriculture in this and other countries shows that the livestock producers have taken a leading part in efforts to maintain and increase the fertility of soils, and in my judgment the livestock producers can now be relied upon more than any other class of farmers to carry forward the gospel and practice of the highest type of permanent agriculture.

While it is conceded that permanent maintenance of soil fertility without livestock is possible, it is not practicable as a statewide policy because it is not the highest type of agriculture and because few farmers can be induced to comply with all the conditions necessary to make it effective. While grain farming will ultimately supplant livestock husbandry where conditions make such a system of agriculture practicable, it should be resorted to only when and where livestock husbandry proves less profitable. able.

A very considerable extension of livestock farming in the corn belt would materially increase the cash output from her farms and at the same time save millions to the future wealth of the corn belt by keeping on the farm a large percentage of the fertility that is now sold off in the form of corn, oats and hay.

It should be clearly borne in mind that if stock farming is reduced, the need for grain is also reduced and the profits of grain farming will decline as well as the fertility of the land. The production of livestock is a supplement to grain growing—a further possible, entirely feasible and profitable step—a farm manufacturing process which converts raw material and by-products into more concentrated, valuable finished animal products, which readily command a cash market. It is a supplement to and not a substitute for grain growing. It not only increases the income, but also, and at the same time, lessens the removal of plant food from the farm. It is an enterprise which aids materially in the development of a well balanced agriculture. The interests of all parties, therefore, demand that instead of allowing livestock farming to decline, it is for the best interests of all that it should now be further developed.

The problem of a permanently profitable agriculture that is worth while is a problem of the farmer as well as a problem of the farm; and no other factor exerts such a profound influence upon the development of the farmer as the ownership of livestock. In other words, it should not be lost sight of that aside from all elements of profit, the establishment and maintenance of systems of farming involving the large use of livestock means that inevitably farms will be occupied by men and women of a high order of intelligence with a full appreciation of the best standards of country life.

H. J. Waters, President of Kansas State Agricultural College, delivered an address on "The Role of the American Farmer." It is a matter of great regret to the officers of the association that they are unable to publish President Waters' address. Thinking that he was speaking from manuscript, the stenographer did not take notes.

Upon motion of A. L. Ames, a rising vote of thanks was given President Waters for his address.

R. J. Kinzer, Professor of Animal Husbandry, Kansas State Agricultural College, and formerly of Marshall county, Iowa, spoke as follows:

HOW THE CHAMPION STEER WAS FED.

PROF. R. J. KINZER, MANHATTAN, KAN.

A month or so ago, Mr. Simpson wrote me a letter in which he complimented very highly the exhibit of fat cattle made last year by the Kansas Agricultural College. He also stated that he had looked over the Kansas steer exhibit this year at the American Royal, and was sure that Kansas would again have the grand champion steer at the International show. I regret exceedingly that the management of the International show did not choose Mr. Simpson to judge the fat steers this year instead of sending to Ireland for a judge, for, had Mr. Simpson been the judge, I am sure that I could have told you how the grand champion was fed and handled. You are doubtless all familiar with the results of the recent International show, and as the champion was not fed on Kansas alfalfa, I am therefore not prepared to give you anything on the subject assigned to me.

Perhaps, however, you are not all contemplating the feeding and fitting of grand champion steers in the individual classes, and are equally, or perhaps more, interested in the production of good commercial cattle and beef than in show steers.

A little more than seven years ago I left this, my native state, and at that time it would have been hard to have made me believe that there was a better place for the production of good cattle and good beef than in Iowa. However, I am now inclined to believe that not quite all of the world's beef supply is produced in Iowa pastures or in Iowa feed lots, or that beef can be produced any cheaper or any better in Iowa than it is possible to do elsewhere.

Kansas as a state is eminently fitted by nature for a livestock state. The climate is mild, and it does not require the expensive barns and sheds that are necessary in many sections of the country to keep stock comfortable. Her soil and the feeds that it produces are conducive to strong, healthy, hearty and vigorous cattle. The varieties of grasses and grains produced are fully as great as can be found in any state, and this, together with a good climate, good transportation facilities, and two good livestock markets on her borders, make the state an ideal place for the production of good cattle.

I had been accustomed all my life to the best of blue grass and clover pastures, and it looked a little hard to see cattle grazing over what seemed to be very scant and in many cases almost bare, rough, stony pastures. But when these cattle came in in the fall, after having made a gain of from 300 to 400 pounds on grass alone, one soon realized that the grass is much better than it at first appears to be. The cheapest beef that we are producing today is made in this manner. It is not at all uncommon to have steers make from 350 to 400 pounds of gain on a pasture of this prairie grass, without grain at all, and this in a comparatively short grazing season, as this native grass does not make pasture early, nor is it the best of late pasture.

A good many of the feeders in the central and eastern portions of the state are abandoning the practice of full feeding in winter altogether, and are depending very largely on grass to finish their cattle. A few are feeding corn while the cattle are on grass, but a majority of them are quite generally using cottonseed meal or cake in place of corn for pasture feeding, with very satisfactory and profitable gains.

For summer grazing, the high, rough or rolling pasture is considered more desirable than a low, level one. It is seldom that there is not a good, gentle breeze blowing over these high pastures, and the hotter the day, the higher up the cattle are found, and even though they can not get a full mouthful of grass at every nip, they seem perfectly contented, and flies are almost unheard of on cattle on pasture of this kind—at least, there are not enough of them to bother the cattle, for it is very seldom that you will see a tail switching.

In late August and early September, I have seen fatter cattle driven from such pastures as these than I ever saw go off the best blue grass and clover pasture in Iowa.

With the increasing price of lands and of feeds, the production of profitable beef to the grower is by no means as easy as it was twenty years ago. We have, in the last few years, heard much about the scarcity of cattle, a decrease in our meat exports, that the production of meats in this country is not keeping pace with the population, and that it would only be a few years until, as a nation, we would be importers of meat, rather than exporters. One has but to travel over the west and study conditions to realize that we are not producing near the number of good cattle that this country is capable of producing. I dare say that Iowa is not producing all the cattle that it would be possible for her to produce, and that she has not made the improvement in her herds in the last twenty years that might have been possible for her to have made.

With land worth from $100 to $250 an acre, of course every one will know it is no longer profitable to breed and grow the type of cattle that it takes four or five years to mature. It seems necessary, therefore, that more attention should be given to the types of cattle that we are producing, to the type of cattle that is demanded in our best markets, and to the most economical methods of producing and maturing them. The man who is keeping on $100-an-acre land no better class of cattle than he kept when land was worth from $25 to $30, is not producing beef at a profit for himself or doing anything for the advancement of cattle in general. It is high time that more attention should be given to the breeding and producing of a better class of beef cattle. The common scrub herds of cows that can be found in almost any state in the central west are not a credit to the state in which they are found, not a credit to the beef cattle interests of the country, and undoubtedly will not give a profitable return to their owners.

Iowa boasts of having more good, pure-bred stock than any other state in the Union; but it would not be necessary to travel very far in the state to find herds of cows that you would not be proud to say you owned. If you will study the conditions in the range country, and note how fast the large breeding ranges are being broken up, and think that it is only going to be a few years more that you will be able to go to the river markets and buy your feeders, you will more fully realize why special attention should be given to the improvement of your native cattle. We frequently hear it stated that there are better cattle to be found on some of our western ranges today than are found in some of the best farming districts of the country, and this statement is absolutely true. The best range owners have culled their herds much closer and use much better sires than a majority of the farmers have done who owned small bunches of cows.

I visited a ranch in the southwest this fall where there were 1,200 cows of breeding age, but I do not believe it would be possible to go through any herds in Iowa and duplicate it outside of your pure-bred herds. For the last seven or eight years two hundred of the poorest cows have been taken out of the herd each year and two hundred of the best heifer calves retained. How many of the herds throughout the central states have received a culling of as large a percentage as this?

The bulls that have been used in this herd have cost an average of

$250, and the result is that it is a herd of very uniform, good-producing cows, that would be hard to duplicate anywhere. It was one of the best examples that I ever had of an opportunity to see of the result of the result of the use of good blood and judicious selection.

The farmer who has a small herd of cows is not altogether to blame that his herd has not been improved more than it has in the past few years. Far too many breeders of pure-bred cattle are not culling their herds at all, and too frequently we hear the statement that a poor bull is good enough for a farmer to use who has a dozen or fifteen cows. The the poorer the man's bunch of cows, the better bull he should buy, for it is much cheaper and much quicker to get improvement through the use of a good sire than through the cow herd.

Another reason why many of the cattle that come from the western ranges today are not better and more satisfactory feeders than we find them to be is due to the fact that many pure-bred breeders think that any bull is good enough to go to the range. They should realize that sooner or later the offspring from these inferior bulls, that never should be used for breeding purposes, will come back to them as feeding cattle, and they should take upon themselves a large share of the blame for these inferior feeders that we so frequently see in the river markets. There is no means by which the beef cattle in this country could be more quickly and permanently improved than if all the breeders of pure-bred cattle would cull their herds from twenty-five to fifty per cent.

One of the best sheep breeders of England was once asked how many rams he would have to breed before finding one good enough for his own use. His reply was that he would not find more than one in four hundred.

What improvement would the breeders of pure-bred corn have made if they would have saved each ear of corn they raised as seed? They tell us that from an acre of corn yielding from fifty to sixty bushels they are only able to get from three to five bushels of No. 1 seed.

If there is any reason, then, for the old law that like produces like, and we expect to improve our breeds of beef cattle, we should not expect to keep for breeding purposes every male calf that is dropped, but rather cull them, and cull them very severely.

Even though the west was producing as many cattle as it once did, and was to continue to produce the same number, it is time that the farmers throughout the central states were keeping more stock for the sake of keeping their lands fertile, and unless more stock is kept, perhaps some of us will live to see the day when Iowa, Nebraska, Missouri and Kansas are buying commercial fertilizers, as is now being done by the New England states. But I do not believe the subject of commercial fertilizers needs as serious consideration at this time as does the subject of where we are to get our good feeding cattle in the next few years, and we continually hear the complaint that it is harder each year to find good feeding cattle than it was the year before.

Not long ago I saw a trainload of cattle unloaded that were shipped up from Old Mexico. Many of them were seven and eight years old, and some of them perhaps ten or twelve. A few of them had been work oxen and were wearing shoes. The whole drove would not have averaged more than 750 or 775 pounds. They perhaps cost from $5 to $7 per head in Mexico, and the man who bought them said he did it because he was unable to find anything else that could be bought at a reasonable price. How he expects to make money out of this bunch, I do not know. It seems to me that every man who is interested in the production of good beef should, as soon as possible, get hold of a good bunch of the very best bred beef cows it is possible for him to find, and get just as many as his farm will carry; raise his own feeders, and feed them out as yearlings, rather than to handle the class of cattle that it takes three or four years to mature. This class of cattle can certainly be handled with greater profits, and, at the same time furnish our markets with a much more desirable class of beef. As soon as it is possible to get the producers to producing a better class of cattle and the feeders to giving more careful attention to the feeds they use and the manner in which they feed, we will hear less complaint about it not being profitable to feed cattle.

Corn, of course, throughout the corn belt states, must always be largely used in our feeding operations, but there are many other feeds that should receive some attention, and many combinations of feed will be made that will give more profitable returns than corn alone. I do not know how generally in this state you are using cottonseed meal or cake. Possibly freight rates here are somewhat against its use, but we find it one of the most economical feeds that we can use for fattening cattle at present prices. Some years ago there was a decided prejudice against cottonseed meal, and many reported disastrous results, and in some cases loss from using it, and especially loss from hogs that were following cattle fed on cottonseed. However, there has been very little complaint of this kind in the last few years, and many of our best feeders are using it very extensively, both for summer and winter feeding, and feeding it for a much longer period than was a few years ago considered possible to do. We find that from feeding from three to five pounds of cottonseed meal daily with corn, we can make larger and more economical gains than by feeding corn alone. A few years ago bran was used by many successful feeders, but that was in a time when it was milled with the old stone burrs. With the improved types of machinery now used in most flouring mills, there is but very little fattening material left in bran. I am very doubtful whether or not it can be economically used for general cattle feeding. It undoubtedly has its place in the breeding herd, and will probably be found very useful in the feeding of a grand champion steer.

Oats, also, probably has its place in the breeding herd and also in the show herd, but it is doubtful whether or not it can be used to the best advantage in the feed lot. With us it is not nearly so generally raised as in this state, and we have very largely made alfalfa take it place. Oil meal and many other by-products can oftentimes be used to good advantage, and very profitably used, and in making up a grain ration with feeds as high as they are at present, these things should all receive careful consideration. Oftentimes it may be found profitable to sell some crop that is grown on the farm and use some of these by-products in its place. Many feeders, I believe, have made a mistake by feeding too much and too good a grade of roughages to their cattle after they are put into the feed lot. We have feeders in our state piling alfalfa hay into their feed racks that is worth $9 and $10 per ton, and allowing their cattle to consume all of it that they will, when they might be making better gains by using half as much expensive hay and utilizing some cheaper class of roughness.

One of the best and most successful feeders that I know of, and a man who lives in one of the best alfalfa sections, has almost abandoned the use of alfalfa in his feed lot, and claims that he can make better and cheaper gains by using a cheaper class of roughness. This is especially true where cattle from the southwest are being fed. These cattle have been raised on the shortest grass that grows, and a grass that is very nutritious. They have not been accustomed to handling large quantities of feed, but rather have always had their rations in a more concentrated form, and it will be found that they will usually make much better gains if you can get them to eat more grain and less bulky roughness. We frequently hear a complaint from feeders in the blue grass and clover sections of the country about these southwestern cattle not grazing satisfactorily, and it is not to be wondered at. When these cattle have been grazed for three or four years on buffalo grass, you can hardly expect them to go onto a large, rank growth of blue grass and clover, that contains a very large per cent of water, and expect them to handle enough of it to make satisfactory and economical gains.

There are many questions in connection with the feeding, and production of beef cattle that need to be considered very carefully, and if we would think of our cattle as being machines for the changing of the rough, raw products of the farm into a more marketable condition, and would give the same attention to get these machines of the most improved and up-to-date types, as has been done with many of our tools and machines now in use on our best farms, and would then give a little more attention to putting the most economical kinds and mixtures of feeds into these machines, we would hear less complaint about the cattle business being unprofitable, less talk about us soon importing beef instead of exporting it; and we would continue to have meat on our tables three times a day.

Mr. Gunn: Each time Professor Kinzer mentioned. cottonseed meal, he called it "cake." I would like to know what he means by cake.

Professor Kinzer: There are several brands of cottonseed cake on the market. You can buy it in nut or pea size or any size you want. We prefer it to the meal; there is very little difference in the value.

Mr. Wallace: It is in the form of a cake first, and has to be broken up, and it is simply a question of how fine you grind it.

Mr. Gunn: That seems to be very hard; will cattle readily eat it?

Professor Kinzer: Yes, they like it. For outside feeding, I would much prefer to have it.

Mr. Gunn: Suppose you are feeding a breeding herd—one that you registered, but you want to raise good breeding cattle; would it be safe to feed them very much of that cottonseed meal in connection with ensilage?

Professor Kinzer: I think the use of cottonseed meal is going to become a very general for breeding cattle in the next few years. Some of our very best breeders are using it to quite an extent with yearling steers. By feeding them a pound and a half—maybe two pounds a little later—they find that they go out on the pastures the next season and graze much better than if they had been wintered on corn or alfalfa alone. It seems to give them strength that they can't get out of any other feed. I saw a bunch of four hundred breeding cows wintered last winter on four pounds of cottonseed meal, without any shelter, and every cow was ready for market the last of July.

Mr. Nicholas: The professor has given us a very able paper on feeding in general; but he did not tell us how the champion steer was fed. I want to know how it was done.

President Sykes: We will have to call on Professor Curtis, I think.

Professor Curtiss: I might answer that question as I have several times before. I tendered a little complimentary dinner to the judge after the judging was over, at which he took occasion to compliment Shamrock II very highly, and they called upon me to tell how it happened. I told them it was very simple and dead easy; that to begin with, we bought a calf from Pat Donohoe; then we named him Shamrock, and then we showed him before a most excellent judge from Tipperary. You can see that this is a combination hard to beat.

I want to say while I am on the floor that, while we are proud of our steers, and I am naturally gratified at being able to produce a grand champion, as anyone would be, we are also proud of our boys. We are proud of boys like Professor Kinzer, who have gone out from our school and rendered such excellent service in other states. Professor Kinzer is one of the Ames boys that the whole state of Iowa is proud of, and he himself belongs in the grand champion class. The boys, as you all know, are worth more than the steers, and I want to congratulate you, gentlemen of this association, upon this excellent program and the unusually sound and good addresses you have had here. I want to congratulate this association upon the excellent work that you have been doing, not only recently, but for a number of years past, in holding to the old ideas (I call them old because a good many of the farmers have been getting away from them), of feeding the products of the farm on the farm and converting them into high-class meat products. We have had, according to the census report that has been partially gotten out, an increase of 122% in the value of Iowa farm lands in the past ten years. That seems like a marvelous increase, and yet I venture the prediction that if we were to convert all of the surplus grains and grain products and by-products of the grain produced on Iowa farms into high-class meat and dairy products, and market the surplus on the farm rather than in the raw state for the next ten or fifteen years, our lands would advance 200 per cent. I have that faith in the agriculture of the Mississippi valley, if we keep along right lines. The feature, above all others, that has made Iowa the foremost agricultural state is the fact that she has always not only produced more agricultural products per acre, or a greater output for the state as a whole, but that she has fed a much larger percentage of that product on the farms of Iowa than any other state in the Union. That is the work that you people are engaged in; it is the work that you have given so much intelligent thought and consideration to.

We have found in recent years that it has been much harder to get to the top at the International and other competitive exhibits than it was originally. We have found, too, that our strongest competitors are coming from the boys who have gone out from Iowa and from Ames. One winning at the International this year that I think you people are directly interested in was the short-fed special class, won by an Ames boy, who is a feeder over in Clinton county. He won with a carload of steers that was by far the best carload of short-fed special steers that has ever been seen at the International or any other show. They were the ripest and best bunch of cattle, for that length of feeding, that I ever saw, without any exception, and you ought to have that young man here to tell you how he fed those steers. He has grown up in the feeding belt of eastern Iowa, and comes from a family of cattlemen, being a nephew of Mr. Ingwersen, one of the leading cattleman of the Union Stockyards, Chicago.

In regard to this question of feeding, and this whole question of reproduction on the farm, Professor Kinzer has pointed out that the conditions are changing, so that it is going to be more difficult in the future to secure the feeding stock than it has been in the past. The range is practically eliminated, or is being eliminated, as a source of supply for feeders, and the question that naturally confronts the feeder is, where will he get the stock? Inevitably it must be produced in the corn belt states to a larger degree than in the past, and that means that the cattle must be bred upon the farms to a larger extent than they have been in the past. There, in itself, is a problem that may be a difficult one. Most of the farmers have comparatively quit breeding feeding cattle, because they felt that they could buy them in the feeder markets cheaper than they could raise them on the farm; and there is the old question of whether or not it pays to keep a cow on the farm merely for the calf that she will raise for beef-feeding purposes. The majority of the farmers have answered this in the negative. If it does not, where will the feeding cattle come from? I believe that the cattle will be raised upon the farms to a larger extent than they have been in the past, but I believe it will be a different kind of cattle; it must necessarily be a different kind. The grand champion steer or calf this year presents the modern type; and while, of course, we can't all attain that degree of excellence that we find in the grand champion, there is something significant in the type.

Someone asked us if we showed that steer last year. I said no. He was not born last year at the time of the International. He was not born until the latter part of January, and yet he went into the International show this year, a little over eleven months old, weighing over 1,100 pounds; and at the end of the show he weighed 1,120 pounds. He kept up his gain of four pounds a day during the show. He was of the very heavy, low-down, early-maturing type of cattle that we must have on high priced land. He had the maximum digestive and feeding capacities, and he was able to consume and convert into high-class product a large amount of feed daily; and it is that class of cattle that we must give more attention to as we produce beef on high-priced land, and on land that must necessarily continue to be high-priced. The old class of cattle that were long and lank and that were late in maturing are not the class of cattle that can be produced profitably under our modern conditions, and especially under the conditions that are to prevail in the future. When those cattle were grown on the cheap lands of the west, and the frames were produced on the very cheapest feed and under conditions that made it comparatively inexpensive, the farmer or feeder could buy them and put them into the feed lot and feed them out at a profit; but when we come to grow them on the farm and feed high-priced products all the time, and take care of them with high-priced labor, it is altogether a different problem; and, as Professor Kinzer has emphasized, we may well give attention to the improvement of our stock, and I believe that along that line is one of the ways in which we must emphasize the importance of more economical production.

Mr. Nicholas: It appears to me that these gentlemen don't like to answer the question I ask for fear that some farmer might go in and take the trophy away from the college. They go out among the farmers and buy up those calves. Professor Kennedy went down to Pat Donohoe, of Holbrook, and bought that calf—or had him thrown in—and made a champion steer out of him. We would like to know how that was done—what feed was used. We don't care whether it was done profitably; we would like to know how it was done.

Professor Curtiss: I didn't go into the details of that for this reason: Naturally, of course, the methods we use in making a grand champion would not be practicable in feeding steers for the ordinary market. I may say that it was profitable to produce the steer —it was highly profitable; but naturally a very great advantage follows the grand champion animal. Being a young animal, the basis of his ration was milk, and he had plenty of it. There isn't any ration that will put a young animal forward as fast as milk, and all the milk that he is capable of taking without deranging digestion. Of course, it is possible to crowd too much milk into a calf, and to get the ration unbalanced; but if you are forcing a calf there is nothing equal to a liberal amount of milk, and naturally that is used in forcing all young animals ahead. In addition to that, we got him to take just as much good feed as we could, and we fed him everything he would eat.

In general, I will say this in regard to feeding champion steers: that we don't feed them—especially the older ones—in such a differt way from what you best feeders would feed your steers. We aim to give them plenty of good, wholesome feed, and corn is always the basis of our rations. Probably, however, we do not feed as large a proportion of it as the average steer feeder. We supplement that with linseed oil meal and cottonseed meal. We use good hay, but a limited amount. We don't undertake to load the animal up with an excess of bulky feed, but give sufficient bulky feed to lighten the ration and put it in the best condition for digestion. In addition to that, we always adopt the practice of finishing our show steers for about sixty days on what we called a "boiled dinner." We know that doesn't pay from the ordinary standpoint; that is, we find that we don't get any larger returns for a pound of cooked feed than we do from feeding uncooked feed; but we do find that we are able to put a little better degree of finish on our animals by it. And then we feed roots. The average farmer doesn't consider it profitable to feed roots, and in ordinary cattle feeding it would not be; but answering this gentleman's question, when you are feeding for the grand championship you don't want to leave out anything that can possibly make the animal a bit better, because, if you do, you will find that the other fellow has put it in. If you go into the game you have to go in to the limit, and to begin with, you have to have the right kind of an animal; if you don't you had better not start. There are a great many high-class animals that will get pretty near the top, and not get quite high enough. It is exceedingly difficult to get a load of steers good enough to get the grand championship. Mr. Hall has been feeding for eight or ten years. We purchased a steer out of Mr. Hall's load after they had been sold and were on the way to the slaughter house. We fed him a year, and he went back and won the grand championship; but there is very seldom a steer among a carload lot that is good enough to be fed out and become a grand champion. The grand champion steers are exceedingly rare. They have to be bred right, and they have to be of the right type and quality; and then they have to be carried on to just the right degree of finish with the utmost skill. The same is true, of course, of the grand champion load. One of the most interesting loads was the short-bred special. I don't know of any bunch of cattle being fed for that length of time that has been developed to the degree of ripeness that Mr. Federson's cattle were this year, and if any of you people were in there, you will confirm my statement.

A Member: What was the length of the feed of that carload?

Professor Curtiss: From the first of August, I believe. It is about a ninety-day feed. It can't be over that.

Mr. Wallace: To what extent is the exhibition of the individual steers educational? In other words, in view of the way you have described the feeding of the champion steer, what is the average feeder in this room to learn from that contest?

Professor Curtiss: One thing is the kind of cattle that it takes to reach that degree of early maturity that will enable them to bring high prices in short feeding periods.

Mr. Wallace: I am referring to the individual championship.

Professor Curtiss: That is true of the individual and collectively: the type of cattle that we find each year in the grand championship, that will take on that quality and that finish which commands a high selling price and which gives a high-priced product on the block. We all know that there would not be, perhaps, a vast amount of difference between a grand champion steer carcass when it goes on the block and one that was ranked a little below him. Sometimes the grand champion steers are fed to a point beyond the highest utility of the carcass. But, after all, there is that lesson of early maturity and quality which we must develop in our cattle, and without that such a load as the short-fed specials could never have been made. The old style of feeding, by putting cattle into the feed lot and shoveling corn to them for a year, or a good part of it, has passed away, and the men that have made the most money in feeding cattle in recent years are those that have made the best cattle with the shortest feeding period; and that is the lesson we learn from the tests of the International, both in the individual and the carload classes.

Mr. Wallace: I felt justified in asking that question because in our papers we have been urging everybody to go to the International. We have been holding that out as the great gathering place where people could learn about the best livestock and the best methods of feeding, especially.

Now the professor has told us about feeding this champion steer, from which it appears that he had the milk from two nurse cows, and that his grain ration consisted during the last two months—I think longer than that, according to the statement sent out by Professor Kennedy—of boiled wheat and oats. The question arises, just what educational benefit is there to the average farmer and feeder who goes to see that steer? As the professor said, the method used in feeding him is not the practical method for you to use in your feed lots. It would appear from this statement that to make a champion steer you must first have the money to travel around and locate a steer that has in him the making of a champion; second, you must be a good enough judge to know that steer when you see him; third, you must be able to hire an expert feeder who can fix up his dope and give it to him as often as he will take it, and keep him groomed, and then exhibit him.

I would like to have Professor Kinzer tell us what he fed his steer. Did you feed boiled stuff, or what?

Professor Kinzer: We fed Kansas corn and alfalfa.

Mr. Smith: It seems to me that there is one phase of the discussion that is being neglected. It is all very well to be able to produce a champion steer, or to produce a carload of steers that will sell to advantage; but I think one of the gentlemen stated—perhaps it was the president—that we are receiving in the neighborhood of thirty-eight per cent of what the consumer pays for the stuff. The first gentleman that addressed us this afternoon said that the logical outcome of American farming (not in just those words, but that was what he meant) is smaller farms. Now, can we go on and produce beef on thirty-eight per cent of what the consumer pays for it? It seems to me that there are problems coming up before us that require as much thought as how to make the most beef or the most pork. This association, with the help of others, undertook to find a way in which our products could be sold, and we receive more than thirty-eight per cent of what the consumer paid for them, but we failed. What next? Are we to go on and spend our energies in the production of meat for thirty-eight per cent of what the consumer pays for it, when this association was organized for the express purpose of finding better markets and better conditions for what we do produce?

President Waters: The last speaker has certainly put his finger on a very important phase of this subject, and I am glad to see the association here engaged in that investigation. There has been very little of it done. I have been following that up myself as best I could. I do these things as a side issue—as a diversion—since I have quit the beef-feeding business. There is a tremendous amount of waste going on in our handling of the stock, including the farmers' handling of it, and particularly after it leaves his hands. I don't know how it is here, but at Manhattan, which is right near the great grazing country where hundreds of thousands of cattle are grazed, a man never thinks of going down there to buy cattle to feed; but he goes to Kansas City. Those cattle are shipped to Kansas City, and then they are shipped back—within fifty miles and oftentimes within ten miles of where they were bred—to be fed again; and then they are shipped from there to Kansas City and to Chicago to be slaughtered, and then probably shipped right back over the same road again to consumers. In other words, the spread between what the farmer gets for his livestock and what the consumer pays is entirely too large in this country; it is out of all proportion to the spread in other countries. The local farmer in Saxony or in Switzerland leads his bullock to the public abattoir maintained by the government, with a government inspector. He may sell the carcass to the butcher, or use it himself.

Moreover, we have a tremendous waste in our way of buying meat. The consumer is partly responsible for this. We go to the telephone and order a five-cent soup bone and want it sent out immediately; let our bills run thirty or sixty days, and maybe don't pay them at all. The butcher pays spot cash to the farmer for the animals, and thus it takes a good deal of capital to run his business. Moreover, we demand high-priced cuts. We demand sirloin and tenderloin, and all that sort of thing, and the neck and trimmings are a drug on the market. In Europe the housewife either goes personally or sends a servant to buy the meat, and they buy a great many of these cheap cuts—some good cuts—and pay spot cash, and carry them home themselves; and thus the expense of handling is a great deal less. Whether or not there is a meat trust in the country; whether the packers are getting more out of this than they ought to get; whether there is an undue amount of profit made here and there—there are certainly too many profits in this business, and the stock is moved back and forth and there is a tremendous amount of expense.

The cotton boll-weevil is threatening to destroy the cotton business in the south, and the government and the state agricultural colleges in the south have men scattered all over the country, trying to induce people to go into the livestock business, and Louisiana is becoming one of the great corn-producing states of the Union. But how can the south go into the livestock business, when their nearest market for their cattle is St. Louis or Chicago, and when the equivalent of that must be shipped back to those people to eat?

Whether there is anything wrong about it, it is uneconomical, and, without blaming anybody, it is unbusinesslike; and we will have to get down to brass tacks and stop this waste before we will get into a position where the consumer can pay the price necessary to enable the farmer to make a reasonable profit on his livestock. The whole thing could be laid bare by a systematic investigation—dispassionate—without prejudice to anybody.

When you stop to think about it, suppose you slaughter at Ames or Manhattan: what are you going to do with the blood? You can feed it to the hogs to better advantage than to use it as a fertilizer, as they do in the packing house. It is not necessary to send that steer to Chicago and ship it back, and lose five pounds of casings or head trimmings that that animal would produce. You take the steer and divide it up, and you find that the cost of sending that animal to market and shipping it back, adding to it two or three days' time that the feeder must devote to that, and railroad fare that he is paying one way, is insignificant in comparison with what it costs to produce that steer. We might have central plants and ship the animals there.

Mr. Doran: I want to congratulate the Corn Belt Meat Producers for having struck the keynote at last. We know how to make meat, but, as Mr. Smith says, there ought to be more profit than thirty-eight per cent in the production of beef or pork. We sold hogs in Boone County at six and one-fourth cents when our neighbor paid thirty-five cents for bacon. It seems to me that the middleman has the big end of the deal. The solution of that problem I think has been pretty well put before this association by a gentleman in this room—one of the organizers of this association. He has time and again told us that we should build slaughter houses and cure our own meat. He has had some experience in building slaughter houses, but they have disappeared in the fire. I would like to hear again from Mr. Ryan, of Fort Dodge, and revive this old subject of discussion.

Mr. Ryan: Mr. Chairman and members of the Corn Belt Meat Producers' Association, I am always pleased to have an opportunity to address the original insurgents of Iowa. That little band of a half dozen men who met at the Kirkwood House a few years ago has grown to have the ability to make more noise—at least in demanding the rights of the farmer and stockman—than the same number of men that ever met at any time or in any country; and I am glad to know that they are going on with that association in a way to perpetuate it.

I have been advocating the establishment of packing plants in Iowa because I know the fellows who have made money out of the business. I know that Mr. Cudahy came here from Ireland a poor boy, and he didn't know so very much more than the rest of us Irish; but he died the other day worth nearly $100,000,000, and he made it all out of you farmers. He made it all by giving Mr.

Doran and the rest of you thirty-eight per cent. I remember George Horner when he was buying hides up at our town about twenty years ago on a salary of $75 a month. He went up to Austin, and he and another man started in the packing business with a capital of $1,200. The city gave them an old creamery, and they started up killing hogs, established a city market, and today Mr. Horner has a plant at Austin worth half a million dollars, that he has made there in the last twenty years. I know that all of the independent packing houses have been prospering; and I know that today, through the efforts of this organization, they will prosper, because this organization has made it impossible for the other fellows and the railroads to discriminate against them. It has made it possible for them to get favorable rates inside the state, and if they are not favorable enough, we propose to see that they are made so. For that reason, I can't understand why anybody should hesitate to interest himself in preparing the products of his farm so as to be able to hand them over to the consumer. Why, gentlemen, the people in the state don't want your hogs and cattle; they can't eat them. They can eat your potatoes and your butter, but they can't eat your steers and your hogs; they want meat. Simply to go through the process of killing and preparing the meats, you send them to Chicago and pay freight on them and ship them back here; and I tell you candidly that I have eaten better bacon and better ham at the farm houses in this state, prepared in the old-fashioned way and smoked in the little smokehouse, than Swift or Armour ever put up in the world. The next thing you will be doing is to send your cows to Chicago to have them milked.

I have talked about this project of organizing a packing plant for the stock, but couldn't get anybody interested in it; and so I concluded that I would go at it myself; and after I found a man, with whom I was well acquainted, who had had twenty-two years of experience in the business, and I knew that I was right, we tried it. We started to build, and had the misfortune of being burned out about the time we were ready to start. We rebuilt again, and met the same fate. This time we are building a plant that wouldn't burn if it was located in Hades. A great many of the farmers and stockmen up in our country have stock with us. We have a standing invitation for all of you to come in on the ground floor. There are no favorites, and you will get the same kind of stock that I have and that everybody else has; and then you will find out for yourselves whether Mr. Doran gets thirty-eight per cent, or who does get it. There is no reason why we should not grow from that one plant to organizing anywhere that we want to, and make them as big as we want to. We have the raw material right in our own state; we have the market at our doors.

The day before our plant burned, one of our men started out and sold seven beeves between Fort Dodge and Des Moines, and had seven or eight men coming to the factory to buy meat. We killed just one load of cattle the day before the fire. We had out three salesmen, and they told us that every place they went the butchers and grocerymen were as anxious to see them and to patronize the home institution as we were to have them. Your fathers and my father used to kill their hogs and their beeves at home, and it doesn't seem to me that we should have to send our stock off to big markets instead of killing them right here at home.

Mr. Spaulding: I have just a word. The question has been asked, How are we going to get a larger per cent for our product? I will illustrate that by telling a little incident that I think one of our early statesmen told in regard to the tariff. He said there was one thing sure: if we bought our goods of other countries, we had the goods and they had the money; if we bought the goods in our own country we had both the goods and the money. Now, gentlemen, I think that will work in the state of Iowa. Iowa, as you all know is one of the best farming states in the world. It is capable of supporting an immense number of workmen, and in place of sending our catle and our hogs and our grain to the east to support the workmen there, we should encourage manufacturers here in Iowa to make a home product. We have a market for the stuff we raise, and until we utilize that we shall give to the railroads their freights to and from the places where they have the slaughter houses and factories. The secret of the whole thing is to have factories established in Iowa, and make our own goods and feed our own mechanics.

Mr. Cownie: With reference to high prices that the consumer pays for foreign produce, we are all agreed that there is altogether too much difference between what the producer receives and what the consumer pays. But it is not the packers alone that receive the profit. I presume you are all aware that I was a member of the Board of Control. I was formerly in the livestock business. I fed and shipped to Chicago for nearly thirty years, and my character was never impugned when I had a good lot of stock on the market. While I was on the Board we awarded contracts for bacon, receiving bids from the leading packers in Iowa, Chicago, Kansas City and Omaha, and I know what I am talking about. We awarded contracts for bacon at twelve cents a pound, and I paid for not as good bacon in the City of Des Moines twenty-five cents over the counter. We bought corn-fed beef; we never purchased anything else if we could help it; never purchased a western steer or a Texan if we knew it. All cattle had to weight 600 pounds dressed, and Texas and Mexican cattle don't weigh that. We were buying that beef at $7 and $8 a hundred, when I was paying 15 and 20 cents a pound for beef over the counter in Des Moines.

We bought for our state institutions every six months from thirty to thirty-two tons of coffee. We paid for the best Santos coffee 12 cents a pound. I bought the same coffee in the city of Des Moines and paid 25 cents—more than double. We bought tea in four, six and eight ton lots at 28 cents a pound, and I bought the same tea from the same merchant in the City of Des Moines, paying 80 cents. So that it is not only in our own produce, but it is in everything else that we buy that there is such a large difference between what the producer receives and what the consumer pays. I bought all-wool suits at $7.50, and I was criticized for buying too good articles for the wards of the state. I have no apologies to make. I have seen the identical suits sold in the city of Des Moines and marked $15.

Now, there is just as much margin between the manufactured article that we purchase and the article that we produce, only we don't know it. You don't know anything about what the cloth on your back costs, or the shoes on your feet. We were buying shoes manufactured in Fort Dodge—as good a shoe as there is made—and still they didn't cost us one-half of what the same shoe sells for in the retail stores. So we meat producers are not alone in selling our own goods at the least possible price that we can be squeezed down to, and paying exorbitant prices for what we have to buy. It is not the packers alone who are making these enormous profits. I don't suppose the butchers purchased meat as low as we did, but I have asked butchers in this city what they paid for carcasses, and they said 9 and 10 cents a pound. We were buying in large quantities for six months at a time, and we were quoted below them, undoubtedly. At the same time, there is too large a margin between what the producer receives and what the consumer pays.

I have some grain down here in Iowa county, where I have my farms rented. I sold my oats down there at 29 cents; last week I was offered only 27 cents. I pay 45 cents a bushel in Des Moines for oats for my chickens, and mine are better than the oats I get here.

How can we avoid that great margin between the producer and the consumer? I agree with Mr. Ryan in regard to this meat production, that the bacon and hams that Armour and Swift and Cudahy make are no comparison to the kind we used to have on the farms when we made them ourselves. We salted the meat and smoked it in a little house. It was not dipped; it wasn't hard and dry like the meat we get now. You can't get a pound of bacon on the market today, no matter what you pay for it, that equals what we made in Iowa forty years ago. You can't get a piece of ham equal to what we smoked in the little old smokehouse with corncobs and hickory. But can each man now put up a little smokehouse and slaughter his hogs and go around peddling his own pork? You know we couldn't do it. If we should go into town and offer our own home-killed and home-cured products, the people who make such a howl about high prices would want to buy them for nothing. I remember when I was a boy selling eggs and butter around at the houses. I have sold lots of butter at six cents and eggs at three cents. The people would say, ''Oh, I can buy that at the store for less money.'' The question is to get the consumers to believe that we are furnishing a better article than they could buy from the large packing houses. We must find a market for our own product after we have it ready.

The convention thereupon adjourned.

WEDNESDAY, DECEMBER 14.

MORNING SESSION.

President Sykes: We have with us this morning Mr. James E. Downing, who is connected with the Department of Agriculture at Washington, under our "Uncle Jim," as we call him. He is going to give us an address on "Cattle Raising in Central America." You know we had him before us last year, and we all enjoyed his address exceedingly, and I am sure we will appreciate this address, because Central America is a country that we don't know much about. I now have the pleasure of introducing Mr. Downing.

THE CATTLE INDUSTRY OF CENTRAL AMERICA.

BY JAMES E. DOWNING.

To give you a more comprehensive and intelligent view of Central America, it will be necessary for me to digress somewhat from the subject assigned, and explain the conditions surrounding the industry which you are most interested in knowing about. The one thing that strikes the American who visits this country is the appalling lack of advancement in all lines of civilization. And this is a country older than our own. It is not confined to any one section, but exists throughout, from the Mexican border to the Panama canal. What is true of one is practically the story of another. However, it will not be practical for me to attempt to cover the entire country, in an explanation, but Spanish Honduras will be taken as an example as applying to the whole.

Sixty years before Jamestown was laid out, and one hundred years before Peter Hudson sailed up the Hudson river, Honduras enjoyed thriving towns and villages. It was in the beautiful land-locked harbor of Truxillo, that Columbus landed on his third voyage to this country, and in the plaza square there is a cross planted on the spot where he was supposed to have knelt down and proclaimed the land in the name of the king of Spain. The place enjoyed for many years the distinction of being not only the oldest commercial port, but the largest traffic with the country inland, on the whole Atlantic or eastern coast. This will serve as an example of how early this country was settled, and with its wealth of natural resources, makes all the more astonishing the lack of progress in every line of endeavor.

The countries of Central America all secured their independence in 1821, but the internal troubles which have followed in the wake have ever been a constant menace to progress. In fact, for twenty-five years there has been a never-ending strife rampant in the country, and during the past fifteen years there is reported to have been sixteen revolutions. The continuous struggle of those out of power to get back in has resulted in a discord which has been a bar to advancement. With this situation in mind it is an easy step to the conditions that exist and keep the country where it is today, and where it will remain until some more stable form of government will have become permanently established.

Many of the customs brought over by the Spaniards in the early days of the country are in existence, and no doubt will be for generations to come. For instance, the old Spanish method of milking a cow is in practice from one end of the country to the other. It is the common belief that a cow will not give down her milk unless first started by the calf. The calf gets two teats as pay for getting the flow started, and is then tied to one of the front legs of the cow while the remaining contents of the udder are drawn into a gourd cup. The native explanation is that the cow will not give down the milk for a man until the calf starts it, and the cow is content in the belief that the calf is extracting the entire supply even after it is tied to her leg.

The total estimated area of this country is about 40,000 square miles (or about the size of the state of Ohio). It has a population of 543,741, more than half of whom can neither read nor write. There are 27,000 whites, 217,000 mixed, 27,000 negroes and 271,000 Indians. In other words, there are more Indians than any other race, and at the present time there are few pure-blooded Spaniards who are natives of the country, the Indian or aboriginal element predominating. In the eastern section of the country these races have experienced little intermixture with the whites. The better-known tribes are the Caribs and Sambos. The Caribs being a livelier and more energetic race than the sluggish Sambos, who are of negro and Indian descent, have driven the latter southward and have forced them to relinquish their former domain. Their origin in Honduras is ascribed to the wreck of a large slaver which was driven ashore not far from Cape Gracias, early in the seventeenth century. The negroes escaped, and, mingling with the Indians, soon exterminated them, and later, by the receipt of firearms and other means of aggression supplied them, became the masters of the entire region. They engaged extensively in the traffic of slavery, by capturing and selling Indians into bondage. The Indians, thus driven into the interior by the Sambos, left the usurpers in power. The number of Samobs now in Honduras is small.

The story of the alleged coming of the Caribs to Honduras is not without romance. They are said to have lived on the Island of St. Vincent, in the West Indies, where, at the conclusion of the war between England and France, they were found to be in such sympathy with the French that their deportation in 1796 to Roatan, in the Bay of the Islands, was brought about. From the Bay Islands they soon made their way to the mainland of Honduras, where they established a number of settlements near Truxillo. The Caribs who came to Honduras were of the tribes of Black and Yellow Caribs, and the distinction in this direction is apparent after the lapse of a century.

The Carib is short of stature, well built, active, industrious and provident, with the aid of his wife or wives. They are clean and have a great talent for acquiring languages, most of them being able to talk in Carib, Spanish and English; some even add Creole-French and Mosquito. Polygamy is general among them, some of them having as many as three or four wives, but the husband is compelled to have a separate house for each. It is the custom when a woman can not do all of the work required on a plantation, for her to hire her husband. Men accompany them on their trading excursions, but never by any chance carrying the burdens, thinking it far beneath them.

The Apostolic Roman Catholic Church is the prevailing religion, and there are no churches of other denomination in all the republic, except in the Bay Islands and two on the north coast, where many of the inhabitants are Protestants. The government does not contribute to the support of the church, but exercises the right to regulate it under the laws. Support for the church is obtained through voluntary contributions. The women constitute the church-goers, and support the church; the men seldom go, but bury all of the dead. A woman never goes to the burying ground.

A narrow-guage road built thirty years ago with French and English capital was originally intended to extend from one coast to another, but never extended beyond sixty miles. From the terminus of this road to the capital it is six days hard ride on mule-back over the mountains.

As in most tropical countries, so in Honduras, there are large areas suitable for the pursuit of agriculture. The wealth of a nation is founded on its agricultural activity, and the returns from the tilling of the soil. In Honduras there is no farming on a large scale, and such plantations as are now under cultivation are chiefly along the north coast and under the direction and management of foreigners. It might be assumed that this country, with its varied climate, its highlands and lowlands and undulating plains, covered with fertile soil, would be a great agricultural region. The situation, as a matter of fact, is quite the reverse. The native rarely raises more corn, beans and rice than will barely keep his family until another crop can be gathered. It is sometimes difficult to buy bananas, potatoes, and even corn in the capital of the country.

What little plowing is done is accomplished by a crooked stick and a pair of oxen, with a yoke lashed to their horns. The care bestowed upon the crops amounts to nothing. A small hole is made in the ground and the seed is dropped in. A rake of the foot covers it, and that is all it gets in the way of cultivation, for there is not a hoe or plow in the country. Corn is the chief article of food, the cereal being ground and used in many ways. Two crops can be secured in a year, but with this advantage there is never enough corn or maize. The latter is grown in every section of the country. The same may be said of sugar cane and red beans. Tobacco and coffee are chiefly raised in the mountainous districts. Agriculture is still in a primitive state. Irrigation has not been attempted by the natives, but there are districts where it could be carried on successfully and the lands made very fertile.

In nearly every part of Honduras the land is suitable for the raising of livestock in a limited way. Cattle are found in the valleys and on the slopes of the mountain ranges. Although some livestock is found in all sections of the country, there are two provinces where three-fourths of the stock of the country is raised. During the rainy season the pasture is abundant in all parts of the country. There are many streams that furnish water; most of it coming from the mountains is cool and pure. But in the dry season the cattle find scant feeding away from the larger rivers, and at this season leave the parched valleys for the mountains, where they manage to exist until the rains come and bring out the grass in the valleys. As nothing is known of hay-making or the curing of fodder, the cattle are overfed during part of the year and half starved the other half. All of the cattle in the country are infested with ticks, the same kind as the Texas fever cattle tick. The cattle spider is also an ever present source of anxiety to cattlemen. The spider seeks the hair of the fetlock for the lining of its nest, and as the animal moves at feeling the loss of hair, the spider becomes enraged and bites the flesh just above the hoof on the pastern, and creates an inflamed condition of the skin, which usually results in the loss of the hoof. An animal bitten by a spider is usually out of commission for a period of nine months.

No care is given the animals by the herders to relieve them of any distemper resulting from the constant attack of myriads of insects. The sanitary care of cattle is wholly unknown, and it is fortunate that no serious diseases have ever found their way into the country, for there is not a veterinarian to be had, and there would be no way of stamping out an epidemic once it had started.

But little attention is given to the scientific breeding of cattle, or care in the raising of stock. From the birth of the calf or heifer, it is left to care for itself. As a result, the breed has deteriorated year after year, and no effort seems to have been made to advance the quality of the stock by the introduction of new blood or the segregation of the herds.

The strongest and best bulls of the herd are usually selected for slaughter, and calves suckle their dams during a longer period than is the custom in the United States.

Cattle reach maturity at a late age. As a rule, heifers are three years old before they produce their first calf, and bulls are three to six years old when slaughtered. Butchering consists in the hacking up of the carcass into haggled meat and bone. The division into shapes and joints as in our own butcher shops, and properly cut steaks and roasts are unknown.

The number of cattle in Honduras can only be estimated, in the absence of statistics, at about 500,000. In order to engage in the business profitably it would be necessary to depart very radically from the primitive methods in effect at the present time. But a foreigner could not profitably enter the stock-raising business under the conditions of the country as they now exist. The frequency with which revolutions appear and the devestation by the army throughout the country does not lend any encouragement to a man to engage in a business of producing a product which is liable to be confiscated for food by soldiers passing through from one province to another. The present beef animals are the descendants of the cattle brought to the country many years ago by the Spanish inhabitants and there has been no importation of new blood of any consequence since the time of the Spanish regime. The breed is, large horns and head, beef type, stag in appearance, and the best not over 1,200 pounds in weight, although some of the fat cattle are five and six years old. The old Spanish herds of long ago, fawn color, large bone, heavy horns, but not so long as the Texas ranger, were the foundation herds of the present-day herds.

The Honduran idea of a good animal is horns, head and bulk, without regard to quality. If a male, he is not castrated under three years of age, whether for market or for the ox-cart, so that he is always an oxen in appearance. With the present primitive methods and lack of better knowledge, the cattle are not considered marketable until at least four years of age, and most of them are five. Nothing whatever is known of corn feeding or finishing. In fact, there is hardly enough corn raised for human consumption, and to feed any number of animals would be out of the question.

Around the small towns stock is permitted to roam at large. The males are given no special attention until after maturity, and mingle with the herds all the year around. The result is that the offspring is mongrel in appearance and quality. Only 14 per cent of the calves born reach maturity. This heavy loss is due to the ravages of the screwworm, neglect, exposure, and wild animals that devour them. The mothers are not good fighters, and the young fall an easy prey to the puma, cougar and the coyote.

The absence of an established market is probably the most serious drawback to the industry. The local consumption is not large, and the methods of butchering decidedly primitive and unsanitary, with no facilities anywhere for preserving the meat. The result is that the fat cattle sell at a low price, sometimes as low as $10 a head, and there is no encouragement to increase the size of the present herds. The fact that all of the cattle are grass fed and stag in quality and appearance would give them a rating of "bologna stock" in this country.

In the smaller towns interior, meat is killed once a week, on Monday. There is no delivering done in any part of the country. Each customer goes and buys meat and takes it home. It is never wrapped up. A string is tied around it and carried home, exposed to the dust of the streets and the eager noses of numerous dogs that follow along. At the capital there is a central market, where meats, fruits and vegetables are sold. All of the meat for sale is slaughtered the year around at about five o'clock in the morning. The carcass reaches the market a little after six, and is frequently in the pot at eaght, the same morning. The capital is situated in a beautiful valley with an amphitheater of mountains surrounding it. The meat could be killed in the mountin the evening before and allowed to hang and cool during the night, but this would be a departure from methods established years ago, and the native is not given to changes.

The carcass is chopped up on a large log at the market, with an axe. There is never but two kinds of meat; either pork or beef. At the time I visited the market last spring the price for meat with bone was 12½ cents a pound, and without bone 25 cents, silver. Each day's kill must be disposed of the same day, for there are no refrigerators to keep it over until the following day. There is never any veal and seldom any mutton. The reason lies in the tax of $2 for each animal slaughtered. This tax is the same on a calf as an ox, and the native could not afford to pay it without selling the veal or mutton at an increased price which the customers would not pay. There is no inspection of any kind, and, regardless of the condition of the animal when alive, if it is bought by the butcher you may rest assured it is sold by him. But the amount of disease among the meat animals is very small, due to the fact that the animals range the year around in the tropical climate of this country, and tuberculosis is unknown. There is no such thing as smoked or salt meat except a small quantity imported and consumed by foreigners. The rainy season, or "winter time," as it is known by the natives, makes necessary some provision of meat during this time when it is difficult to butcher. So the native prepares as against this time by butchering and cutting the carcass into strips, which are hung out of reach of animals and vermin, on poles in the hot tropical sun of the summer time and when dried it is stored away. Lard is rendered and put into bladders that are suspended from the ceilings of the adobe houses, and some contrivance placed over the bladder so mice can not reach it. This lard is used to fry not only meat but beans as well, for fried beans are to be found on the table of the native two meals a day the year around. Vegetables are found only at the capital and one or two of the larger towns of the country. Although the climate and soil will produce most every known fruit and vegetable, the native's bill of fare is confined to a few staples from which he seldom varies.

Butter is a luxury and a delicacy in Central America. Cheese is a common article of food, but there is only one kind, and that is poor stuff. Butter is eaten as a relish on greasy fried beans. Cheese is eaten three times a day when it can be had. In a journey from one ocean to another and back again, one will see nearly all of the houses covered with tile roofs, and find furniture of red cedar and mahogany, yet one will not find a churn in the entire trip. If you stop in any of the larger towns, especially seaports, you will be served with Norwegian tinned butter, which is very expensive. At only one place in a trip of 1,325 miles did I find a tin of American butter, and that was from Monticello, Iowa. How it ever got there is more than I could figure out. Nearly all of the steamers that go to these countries are Norwegian bottoms, and these of course have Norwegian tinned butter. You will find this and "prune soup" your daily companions.

The native custom has all to do with the supply and demand for butter, which can not be compared with American butter; in fact, it is not real butter, but merely sweet clabber that has the milk strained out through a piece of muslin, and the mass left in the cloth is called butter. The native does not have bread like we do. He likes best a substitute made from corn, which he calls "tortea." It is made by rubbing soaked corn which has stood over night in lye water, between two stones until it become a paste, and then fashions it with the hands into a cornmeal pancake. This is laid on a piece of sheet iron over a "dobe" (clay) stove, and when cooked is a cornmeal pancake without salt. This is the native bread from one end of the country to the other. They are not eaten with butter on them, and they never have nor know anything about syrup, although sugar cane grows the year around without any attention in the way of cultivation, but is used to make rum or sugar. Butter, being used only as a delicacy or relish with hot fried beans, does not call for a large amount of the article, and the result is that there are few places where it can be had. The average native very naturally learns to get along without it.

There is but one kind of cheese made in the country. That is a native article which resembles very much what we call "cottage cheese"—pressed into cakes that drain and dry after a sufficient time on coarse stick mats, where it is exposed to the atmosphere. Cheese-makers are always near a large place, where the consumption warrants them in locating, but there is but one establishment at a town, for there is never any competition. Under the system of milking in the country, which is but once a day, cheese making necessitates a large number of cows. At one place I visited, the man had 125 cows, from which he received 250 bottles of milk holding fifteen ounces each, from which he made forty pounds of cheese daily. During April, May and June, he received $5.50 an arroba, or twenty-five pounds of cheese. The best milch cows give at most five bottles of fifteen ounces each. A good milch cow is valued at $13 gold, and the milk sells at five cents for bottles that hold fifteen ounces. A dairy or cheese factory is always located near a large town, and if there is a surplus of cheese made, it is packed on mule-back to another large town. This was practiced at the place mentioned, the surplus being sent to the capital, a distance of seventy-five miles, on mule-back over the mountains.

The trough in which the cheese is worked is generally of fine red cedar. All of the work is done in an open shed, with merely a roof over it. The natives seldom have more garments on than are absolutely necessary, and sanitation and cleanliness are matters that do not give them much concern. A curiosity found at cheese-making ranches is a native strainer. It is made by cutting out the center of a gourd and fastening a woven mat made of horsehair over the opening. This is the only strainer in use at any of the places where milk products are handled.

Cowboys on the ranches where cheese or butter is made are paid on an average of $30 a year, silver, two suits of clothes, their food and lodging. This is a very low wage for the hours they put in, and I was informed that the reason they could be secured at this low wage was due to the fact that they could ride a cow pony and not have to walk. All of them go armed, although there is no occasion for it, but the custom of the country is to go armed, and it is unusual to see a native without some weapon of defense. A domestic on a ranch is paid $2 a month, silver, and gets her food and lodging, but no clothing. Nearly all hired help go barefooted the year around. This may appear to you as being very cheap for help, but it is cheap help. Like all tropical countries, the natives, especially the men, have that all-gone, tired feeling, and everything is "manyana," meaning tomorrow. "Put off until tomorrow what can be done today," is the idea. No matter how hurried you may be or how anxious you are to have something done, it is always "manyana" before it is attempted.

Of all the tropical countries within reach of the United States, Honduras is the only one where the United Fruit Company, of Boston, has not secured a monopoly of the fruit business. The government is not friendly to this concern, so that it has to operate through the medium of so-called independent companies in which it has a controlling interest. I was so impressed with the waste of bananas down in this country that I was prompted to look into the matter, as I had a little time to do so. I witnessed the destruction of 2,500 bunches of fine bananas at one of the ports, and was told that this was a common occurrence at other ports as well. The excuse was given that the buyers had overbought the tonnage of the boat, and none of the other boats in port at the time would take them, as their own buyers had contracted for a full cargo. The trust, through their buyers, pay 62½ cents in silver for bunches of bananas that consist of eight hands, f. o. b., at any of the stations along the railroad, 31¼ cents for seven hands, and 16 cents for six hands. Much trickery is said to be practiced in the classifying and counting. Bananas are a continuous crop in this climate. The old stocks are cut down when the fruit is harvested. They grow twenty feet tall. Three new sprouts will come in the place of the old stock. It takes nine months for the new stock to develop marketable fruit. Ground suitable for a banana plantation must be very rich and loose, to enable the roots of the plant to penetrate it. It is the highest-priced land in the country, and hard to secure near a line of transportation.

The certified cost of a bunch of bananas shows that it costs 41¼ cents a bunch, all charges paid, at the dock in New Orleans or Mobile. The lowest price that I ever heard of bananas selling for in this country was 75 cents wholesale, and from that up to $1.10. Upon their arrival they are taken from the boat and loaded direct into refrigerator cars standing on the wharves. The boats carry from 30,000 to 35,000 bunches a trip.

The financial condition of the country is anything but flourishing. The money is on a silver basis, and is rated in exchange for United States money at 37½ cents on the dollar, but fluctuates with the price of silver abroad. The Bank of Honduras was established October 1, 1889, with a capital of 1,000,000 pesos, or silver dollars. It has two branches, and is the only bank in the country. Much of the banking business of the country is carried on through the larger mercantile firms that carry accounts with one another. The money in circulation is both silver and currency, but the popular medium of exchange is a piece of silver the size of our quarter in silver, called "pesata," which is largely used in small transactions.

What is true of Honduras, however, is not true of all of the other countries in Central America, for some of them have depreciated their money until it has reached a much lower value in exchange. For instance, the rate in Guatemala at one time was "23 to 1," meaning twenty-three of their dollars to one of ours. But everything is priced in keeping with the exchange, and $50 and $100 bills are used freely. A shoe shine costs $1. A ride up to the hotel from the station, $15. A cotton shirt will cost at retail probably $50, and other things in proportion. A friend told me he went to send a short telegram. The government owns the line, and rates are very low. He had no money the country, but tendered 50 cents of our money, and received back $4.50 of Guatamala money. But the best story I heard along this same line came from Colombia, which joins Panama on the south. An American spent a few days in Bogota. When he was ready to leave he asked the proprietor of the hotel how much his bill was.

"It is $1,500," said the landlord.

"No, you don't get my meaning," replied the American. "I can't talk Spanish, but I just want to know how much I owe you. I don't want to buy the hotel."

"Well, I meant what I said," answered the landlord, "you owe me $1, 500."

"I don't know what you will do with me," answered the bewildered American. "I haven't that much money, and never did have. I suppose you'll put me in jail or wait until I can get it somehow."

"Have you $5 in gold?" inquired the landlord.

"You mean a United States five-dollar bill?"

"Yes, that is what I mean."

"Why, yes; I have one."

"Well, that will do all right," answered the landlord, much to the relief of the anxious visitor.

The greatest expense to any of the republics is the standing army, which costs about $100,000 silver a year, and is a hot-bed of graft. It is difficult to secure recruits, although they are taken in under the name of volunteers. The favorite method of recouping the army is to wait until a foreign banana plantation owner gets a force of natives to work for him, and then have the governor of the province send a delegation of soldiers to his place and draft most of his laborers. I heard a man tell of being in the midst of filling a contract for bananas for a steamer in port when the governor sent for fifteen of his workmen. If they do not go willingly, they are tied together with ropes and are marched to headquarters, where they are registered. If they run away, they are captured in the course of time and placed in jail. Excursions are made into the mountains and ranchers' boys are drafted for the army. One of these boys was placed on night patrol duty. About midnight he encountered a man going along in the middle of the narrow street. He halted him and inquired who he was.

"I am the captain of the day police, on my way home," explained the man.

"If you are captain of the day police, what are you doing out at night?" Bang went his gun, and the officer dropped. What could you expect of an ignorant mountaineer who had been given a bent-barrel gun, more dangerous behind than in front, and authority to make arrests.

Much of the business of the country is carried on by telegraph. This is because the mail is slow and uncertain, due to its being carried over the mountains on mule-back, and during the rainy season the streams are swollen so that it is not only dangerous to ford them, but frequently impossible. The government owns the lines, and the rates are very reasonable. However, matters of importance or state secrets are sent by trusted messengers, for the operators "leak" and cannot be trusted to keep confidential matters to themselves. Not all of them are strictly temperate, and it not infrequently happens that an office will be locked up for a day or two until the operator gets through his spree. In the meantime, business at his station is halted and accumulates until he returns.

Central America is the home of Americans who "can't come back." When you meet one, you do not know whether the name he gives is his right name or not. It is a matter of etiquette peculiar to the country not to ask too many questions concerning a stranger's previous whereabouts. Most of them are men who have brought some money with them, and, by taking advantage of financial opportunities, are able to live without the necessity of actually working for a living, although some few actually work. Some of them are managers of branch stores or look after the interests of foreign investors. These men, however, can not take unto themselves all the credit for questionable transactions, for graft was started early in Central America. It is related that during the Spanish regime the people of the capital told their sovereign king that they had started a monument to his memory which, when completed, could be seen by him from his castle. He was so impressed with the idea that he is said to have given the government a large sum of money. The monument was pointed out to me, and it was not over twenty-five feet high .

All towns are situated on a stream, and all farms and ranches near a water supply. There are no wells or pumps. All of the family washing and laundry work is done in the streams. The women—who do nearly everything that is done at all—take the clothes in a bundle on their heads and go to the stream and stand in the water to do the washnig. After the clothes are washed, they are spread on the grass or on the bushes to dry. They do not have washboards, but use a shallow wooden trough in which to rub them.

Coal oil in the interior of the country sells for $2.45 a gallon, and some of it is adulterated. This is the price in silver. In gold ,it represents 91 cents a gallon. Only people of the more prosperous classes have it, while the native gets along with candles and the very poor use pine splints, which are lighted and put in the middle of the dirt floor in the dobe houses for lighting up the one living room, the door and windows of which are closed for the night. The windows are mere openings in the wall, and there is never any glass or frame. Sometimes there is a shutter. When night comes, the door is closed and the family retires early, to lie on the beds made of a wooden frame with a cowhide tacked over it. There they all smoke homemade cigarettes and talk.

"Once an Indian, always an Indian," applies in this country as well as our own. Natives of the better class who come to this country for an education go back home and fall into the same old rut. It is natural to suppose that they would carry home with them some new ideas of living, especially something of sanitation, but a native who graduates from our universities can be found at his old home, doing things in the same old way—doing without water closets, packing water from the stream to the house, and never bathing except in the stream near the town he lives in. Hogs, dogs, chickens and cats all swarm into the house and under the table. They are the scavengers of the home as well as of the town.

This whole situation is well described in a historical sketch written years ago by a former American consul to Central America. He says: "The narrow colonial system of Spain had the effect of keeping her American possessions, and especially Central America, entirely excluded from intercourse with the rest of the world. None of the improvements in the arts or in agriculture, which elsewhere were effecting gradual but total revolutions in the industries of nations, were permitted to reach that country. Trade was monopolized by the crown, which equally undertook to regulate the amount of production of the various articles for which these colonies were distinguished. A single example will illustrate the extent to which this jealous and oppressive policy was carried. Early in the eighteenth century the cultivation of grapes had been introduced upon the northern coast of Honduras with so much success and promise as to attract the attention of the government of Spain, and to lead it to fear that the colony might ultimately come to rival the mother country in the production of wine. Orders were consequently issued to the officers of the crown to destroy the vines, which orders were carried out. Since that period no further attempt has been made to introduce the grape, but no doubt exists of the fact that it might be produced in great abundance and become an element of wealth to the state."

"The internal trouble which followed the independence of the country in 1821 has left it no opportunity to repair the errors of the previous colonial system, which had so frequently suppressed its industry and prevented the development of its resources. These commotions deterred foreign enterprise from taking that direction, while they equally debarred the people themselves from making an effectual use of the limited means at their command for their own improvement.

"A great, and until remedied an insuperable, obstacle to the development of Honduras, is the want of adequate means of internal communication. The roads, so-called, are mere mule-paths, often conducted to avoid large and rapid streams, over the steepest and roughest mountains, where in some places they are so narrow, abrupt and obstructed that the stranger recoils in despair of effecting a passage. The loads carried by mules are necessarily light, and the expense of transportation becomes so great as to effectually prohibit the exportation of the more bulky products of the state, except from places near the coast. All articles of importation, also, which can not be packed on mules require to be transported on the shoulders of men; and pianos, mirrors and other foreign articles of bulk and value in the larger towns of the interior have all been carried in this manner from the sea ports—distances varying from sixty to one hundred miles.

"The importance of these material considerations is well understood by all the educated people, and it is but just to say that they are disposed to make use of every power, alike by the encouragement of foreign enterprise and by an active co-operation on their part, to hasten the development and secure the prosperity of the state.

"It is only by a judicial system of colonization, which shall ultimately secure the predominance of white blood, and at the same time that it shall introduce intelligence, industry and skill, that the country can hope to achieve peace, prosperity and greatness. With vast resources, a climate adapted to every caprice, not less than to the products of every zone, and an unrivaled position, it would be a practical denial of the evidence of high design to doubt the future power and greatness of the hitherto little-known, the long-distracted, and as yet utterly undeveloped republics of Central America."

I might go on and tell you more of this "country of manyana, the hammock and banana," where the women do the work; but I fear your minds are much the same as that of a celebrated Roman poet (the one who had fourteen children, and learned from some oracle or other that his second wife would maintain an average still better), who said: "Hold, I've got enough!"

DISCUSSION.

Mr. Ryan: I would like to ask Mr. Downing to give his idea as to what the effect would be on the meat produced in this country if the tariff were removed so as to let meats come in free from Central America?

Mr. Downing: It wouldn't make any particular difference if it was possible to bring them in. In the first place, I would say that it is impossible, for the reason that there is a quarantine on now, and it is going to remain on. I don't think any of us will live to see it raised. It is due to the fact that there are Texas fever cattle ticks from Texas down to Buenos Ayres today. We have ticks of our own and don't want to bring in any more. But if those meats could come in here it wouldn't make any particular difference, for this reason: At the conclusion of the Spanish war, the livestock industry of Cuba was devastated, and they began to get their supply of cattle from Honduras. The most that they ever bought from Honduras was 25,000 head in a year. They have a fairly good foundation down there for starting the cattle business, but giving them the benefit of the doubt, the most that they could produce and ship to this country would be 35,000 to 36,000 head a year. Of course, the nearest point would be Honduras. I don't think that number of cattle would cut any figure with the price or with the industry in this country.

Mr. Ryan: How would it be if the animals were slaughtered down there?

Mr. Downing: It isn't practical to slaughter them there, because you can't get enough cattle to keep your industry going. There is also the disadvantage of a tropical climate.

Mr. Thorne: Aren't there large tracts of land there?

Mr. Downing: There are large tracts of mountains. When yon get down into Argentine Republic, it is a nicer country. That is the good agricultural country of South America, and that is our beef competitor at the present time in the south; but nothing in Central America from Mexico to the canal, will ever count for anything. Cuba has already sent three shipments of chilled beef —the first since the war; but I don't look for Cuba to ever do very much.

Mr. Gunn: You spoke about the Argentine Republic being quite well advanced. What would be the result if we could have dressed beef shipped in from Argentina? Couldn't it be produced there much cheaper than here?

Mr. Downing: That depends on what kind of beef you are talking about—whether it is corn-fed or grass-fed. They can produce grass-fed beef cheaper than in this country; they don't know so much about the corn-feeding and finishing there as here. Argentine Republic is responsible for our decline in exports. It is furnishing England with a large amount of her beef; and, as Argentine came to the front American exports began to go down, and at the same time our own consumption began to increase. There has been more or less in the papers regarding the possibility of Argentine beef being shipped into this country. The so-called beef-packers' trust now controls two of the largest plants in Buenos Ayres, and their total shipments of mutton and chilled beef exported to England amounted last year to almost one-half of the total amount shipped out. They are rapidly coming to the front down there, and while they do not control the situation, so far as is known at the present time, it is only a question of a short time until by modern methods they will have acheived practical control of the market of Buenos Ayres. But so far as their shipping into this country is concerned, I have not seen anything from anyone in a position to know that would lead me to believe that they will be a dangerous factor for some years to come. Iowa especially has a little advantage. It is a big story, and I don't want to take up your time; but suffice to say that the corn-fed beef—the good stuff of today—must be raised in the future in three states in the Mississippi valley: Illinois, Missouri and Iowa; and I think it is the very greatest opportunity to put on the market the best beef that goes on. It is Iowa's opportunity to feed every bushel of corn that you raise at home, and not ship it out of the country. It is Iowa's opportunity to make a bargain with old Mother Fertility to keep house for the farmers of Iowa from now on, and I think the corn belt people are the ones now to take advantage of that opportunity. There is no relief in the east; there is none in the south; there is none in the west. We must go to those three states in the Mississippi valley for our good meat in the future.

Mr. Ryan: Isn't it a fact that those cattle in Argentina get just about as fat on grass as ours?

Mr. Downing: They get fat on alfalfa—they are putting more of their land in alfalfa—but the grade is not quite as good as the corn-fed. They can probably grow and fatten a grass-fed animal a little cheaper than we can, but they can't get the quality into it.

Mr. Ryan: Would it be practicable to ship to Fort Dodge, to the packing plant there, so as to compete with the Iowa people?

Mr. Downing: I don't think so.

Mr. Thorne: I understand it has been proposed by some people to take the tariff off of meats and cattle and livestock, and there is no corresponding proposition to take the tariff off of other manufactured commodities, and we are in the business of manufacturing beef. I know that the consumer has great rights that must be considered, but we consume shoes and clothing and other things. I want to ask, not for the purpose of argument, but for information, what in our judgment would be the effect on the livestock industry if the tariff were taken off of livestock and dressed meats?

Mr. Downing: I think the industry would be placed in a rather precarious position, for this reason: If you take the present protection away from it, with the rapid advancement that the packers are making in securing control of the situation down there in Argentina, where they are increasing their feeding grounds, where they are raising more stock and getting more intelligent all the time, and also feeding their stock for the English market, it would lay us open to an opportunity for these packers, after they have acquired a foothold down there and a control, to play both ends against the middle. They could have the United States, they could have South America, and they could continue as they do at the present time, to have their own sweet way about it.

Mr. Ryan: I would like to ask Mr. Downing if it is not a fact that the packers not only control the majority of the packing plants in Argentina, but that they raise their own cattle and have their own ranches?

Mr. Downing: They do to a certain extent; how great, I am not prepared to say; but they do have their own ranches and raise their own cattle and have their own packing plants, and I think they have some of their own boats on rivers that are navigable; so that they have their transportation facilities. It is quite natural to assume that men who come down there after anything of that kind in the way of control of a market would have everything that goes with it—have all the necessary facilities for carrying out their plans; and their plants are the best equipped plants down there. Their methods of refrigeration and everything else tend to show that they are a little ahead of the procession in all their movements, and the papers of that country speak quite highly of the progress that is being made there in the industry of chilled beef. When the packers went down there, a great deal of the beef sent to England was frozen. Frozen beef doesn't thaw out in competition with chilled beef; it doesn't have the color; and chilling is at present the best method of preservation. The American packers down there seem to have a little the best method of chilling and handling, and the fact that they have also just completed a contract with nineteen steamers for their capacity for transporting beef to England would indicate that they have still larger plans for the future.

President Sykes: This is a very interesting discussion, but it is already getting late, and we have another very important number on our program; so I think we will have to close this discussion at this time. The next man is one whom we all love to have with us, and perhaps this is the time that he will say good-bye to us—at least for the next four years. Anybody who heard him talk would know him, even if they never had seen him, because he never talks on anything but rates. I now introduce to you Hon. Clifford Thorne, the newly elected railroad commissioner, who has done so much for the people of Iowa.

Mr. Thorne: You heard last night about the man who was reduced to such straightened circumstances that he had to eat ox-tail soup and ox tongue in order to make both ends meet. I am in that situation just at the present time. I have been requested by several gentlemen who run newspapers around this burg to furnish a copy of some of my remarks; so I have reduced them to writing, and I am going to give you a little ox tongue and an ox-tail; in other words, I am going to read off this paper the beginning and end of my speech; I think it will give more coherence to it.

I have had no opportunity to make preparation to give you gentlemen the talk that I should in bidding good-bye to this organization, with whom my relations have been the most pleasant of my whole life. I have been for seven weeks engaged in the court room in the prosecution of a case. I have spent over one hundred days in constant work upon this case. In coming up here I am taking time that should be devoted to the preparation of a brief.

The average man in Iowa has given little consideration to issues at stake in the present investigation relative to advanced rates. Those issues are to be determined largely as a matter of public policy, that is why the public should study the facts seriously, so that it can express itself intelligently and strongly. Certain organs are bringing tremendous pressure to bear on one side of the controversy, and unless there is a positive definite statement from other sources, backed up by absolute facts, an entirely one-sided and distorted public sentiment will be built up within the next few weeks, that will necessarily have a powerful effect upon the tribunal called upon to determine these questions of far-reaching national import.

I give Iowa fair warning that if the railroads succeed it will be almost impossible to effect any substantial readjustment of her interstate rates for many years to come.

The gist of the claims advanced by the railroad companies has been well summarized in the following brief sentence recently stated by Mr. Commissioner Martin A. Knapp, in New York City. "Must we not in the larger public interest, whatever may be thought by this or that shipper, make the business of furnishing railroad transportation so desirable to the investor that the necessary funds for betterments and extensions will be forthcoming?"

It has been very widely asserted during the past few months that railway securities are no longer attractive to the investors of the country. Many shippers have tacitly assumed that this is correct, and have endeavored to devise some other means of improving railway credit as a substitute for advanced rates. It occurred to me that an exhaustive investigation should be made upon the main proposition before any such concession was granted.

It is not fair to take any month, or any period of three or four months, as typical of the general tendency in any industry. From a broad, fair review of conditions over a series of years, three facts can be set down as conclusively established in regard to our railroads:

First, the credit of railway companies is as good or better than that of any other class of public service or industrial companies in the United States.

Second, railway securities are more attractive to actual investors, and have increased in value more rapidly during the past decade than any other class of securities on the market at the present time.

Third, the earnings of our railroads above all operating expenses and all taxes has been increasing steadily during the past twenty years, and last year was the most prosperous year in the entire history of American railroads.

In the face of such a record as that, it takes lots of nerve to ask for higher rates. But I suppose any of us are willing to get all we can.

In support of those three propositions, I filed in the record before the Interstate Commerce Commission over 580 typewritten pages of figures. I am not going to read all those figures to you, but I am going to tell you briefly the gist of some of the things that I did establish. Most of these questions are matters of public policy. For instance, I will give you two illustrations:

It is claimed that the railroads are entitled to keep their properties up to date out of earnings. The supreme court of the United States has held that they are entitled to build certain improvements and betterments out of earnings. Now, where is the limit? One railroal actually says that it should be entitled to pay six per cent dividends on its capital stock, and should have an additional six per cent to put back into the property in the shape of betterments and improvements and extensions; and it says that rule should be allowed all over the United States, because the public are demanding better facilities, double trackage, better and larger cars, and better speed; they have to have the money to do these things, and they ought to take it out of the earnings and not make it a charge upon the people of future years and future generations. Do you know what that little item would mean? Figures sound terribly abstract and cold; we don't appreciate their true significance. Six per cent upon the capital stock of all the railroads in the United States, as asked for by President Ripley, of the Santa Fe railroad, would mean over $400,000,000 a year additional railroad tax upon the public in this country, a sum that exceeds the entire customs revenue, the entire tariff of the United States government. This tariff that we have been haggling over for generation after generation, and that most people today think is the greatest issue before the American people—not the advance or reduction of that tariff, but the whole thing together, is less than this one little advance asked for by the railroads of the United States. It is simply stupendous. As I said last night, gentlemen, since the Dred Scott case there has been no matter pending before any tribunal in the United States equal to the issues at stake in this case at the present time. It is not just in dollars and cents, either. I will tell you another phase of it:

If a general raise in rates over the United States is allowed (and Mr. Ripley says this is the entering wedge; this is to be the test case; and the Interstate Commerce Commission is devoting months and months of time to it, as well as a few others of us), what will it mean to Iowa? Iowa has been held up as a scarecrow to these surrounding states because we wanted to get our interstate rates readjusted. We have a readjustment on the livestock rates, and (bless God for you fellows' kindly help) we are going to try to get some other rates readjusted. How are we going to do it if the railroads persuade the Interstate Commerce Commission that they are entitled to more revenue? What condition will your great state be in when it comes up and asks for a substantial reduction on any other class of rates? The railroads will immediately say: That will mean a reduction from our revenues amounting to half a million or a million dollars a year, and that will be a substantial reduction. If that reduction is made, the railroads will say: Where are you going to raise rates elsewhere to make up for it? Can the commission dare to raise rates to Chicago and St. Louis and Kansas City? Imagine the tremendous pressue that will be brought to bear upon them! No; if the railroads establish the fact that they are entitled to increased revenue and greater earnings, mark my word, it will be almost an impossibility to get any material, substantial reduction for years to come in the state of Iowa.

The question of how much surplus earnings these companies are allowed to put back into betterments and improvements is a matter of public policy. They are entitled to some; how much are they entitled to? Public sentiment is being created that in turn will be crystallized into public policy, and will be established by our commissions and legislative bodies. That is why we must consider these matters. They are not merely technical, legal questions for these judicial tribunals to determine; they are matters for the great thinking public of the United States to decide.

One other question of public policy; I said there were two. This second one relates to the weaker line of argument. You men know that here and there there is a road which is not making decent profits; they are serving the public; we can't afford to have them closed down. The question immediately comes up: If they are not making reasonable profits, should we raise rates everywhere in order to make it possible for them to do a more profitable business? Coincident with that there occurs to your mind: Can you and I afford to let these companies saddle upon the public the mistakes, mismanagement, wrong erection of railroads here and there over the country? Can we afford to let those managers saddle these mistakes upon the public and make you and me pay for it? These are questions that must be determined by logic and reason rather than cold facts.

* * * Where should a person go to find out whether railroad securities are attractive investments and whether railroad credit is seriously impaired? Unquestionably there is just one place above all others where this information can be obtained—that is the market place for such securities. For the purpose of this investigation, I took a recent month, that of October, and secured the market prices of the bonds of all the railroad companies making an appearance in this case, and also the bonds of all gas, electric light, telegraph, telephone, street railway, manufacturing and industrial companies, whose bonds were sold on the New York Stock Exchange during the month of October, 1910, according to the published reports in the New York Commercial and Financial Chronicle, omitting the following classes only—income and convertible bonds and bonds maturing prior to 1931—my effort being to find the market quotations for ordinary typical securities of a somewhat similar character, issued by a representative list of the various classes of industrial and railroad companies.

I find as a matter of fact that, with only one exception, the average market prices of all railroad bonds sold during the said month were higher than the average market prices of any other class of 4 per cent, 4½ per cent, 5 per cent or 6 per cent securities. I also find that, with three exceptions, the average market prices of the railroad bonds were higher than the highest market prices of any of the street railway, gas, electric light, telegraph, telephone, manufacturing or indutsrial companies.

One claim advanced by the companies has been that their credit has gone, because they can no longer market 4 per cent bonds at par. I made two long lists of representative public service corporations, one including all street railway companies in the state of New York having an operating revenue amounting to over $1,000,000 annually, as reported in Poor's 1910 Railroad Manual, and the other list including the bonds of such companies whose securities sold during the first week of November, according to the New York Commercial and Financial Chronicle; and I find that none of these gas, electric light, street railway or other public service corporations have marketed any 4 per cent bonds since the year 1907. Even the United States Steel Corporation and its subsidiary companies, with their vast resources, have no outstanding 4 per cent bonds. Of all their fifty-eight bonds, reported by Moody, only one issue is on a basis lower than 5 per cent, and that is a 4.4 per cent bond.

It is no evidence of bad credit that you can't borrow money today at four per cent; in fact, that is a general financial situation. I told the commission that they could raise these rates to their hearts' content and they wouldn't make it possible for these companies to market four per cent bonds at par; that they would have to readjust the entire financial situation in the country, and, in fact, the world, to sell them. My statement may sound rather presumptuous, coming from this corn-fed product of the state of Iowa, but immediately the Wall Street Journal came out and indorsed my proposition and said I was on absolutely sound ground, and that the railroad officials were wrong when they said their inability to market four per cent bonds was an indication of bad credit; it was simply an indication of the general financial situation in the country.

But reasoning and thinking about that thing brought up another proposition to me: If it is true that the railroads have to pay more for their money, isn't that an argument in favor of advanced freight rates, so that they can have more money to borrow with? I found out that the market prices of bonds have been declining somewhat steadily during recent years. It occurred to me first to find out whether the market prices of other bonds had declined, and I took four representative industrial companies and four representative railway companies that appeared at Washington, and I found that the market value of the industrial bonds decreased practically the same as the railway bonds. Then it occurred to me to wonder what about the market prices of stocks: perhaps they have been going up; and if that is true, why shouldn't the railroad companies put their money into stock investments in place of borrowing on them? Why should they have that margain between the bond rate and the stock rate? I found that no such margin exists in England. I have here an exhibit showing the average bond and stock rates paid by all railway corporations operating in England, Wales, Ireland and Scotland. I found that in over ninety per cent of the companies in that extensive list of public service corporations no such margin existed between the bond rate and the stock rate. So I wanted to find out what had happened to the market price of stocks that would indicate that they could sell their securities of that kind in place of their bonds, and I took all the companies that made any appearance in this case, and I found that while their bond market price had been going down, the market price of stocks had been going up. For instance, I found that if you had bought 1,000 shares of Michigan Central bonds in 1900 at the mean price (that is, half way between the highest and lowest prices at which their bonds sold during that year)—and I took a typical long-term bond of that company—and if you had sold out at the mean price in 1909, you would have lost $5,000 on your bonds; but if you had invested the same amount of money in stocks of the Michigan Central at the mean price of 1900, and sold them out at the mean price of 1909, you would have gained over $40,000. That is a typical illustration of the entire situation. I took all the companies who had made any appearance in the case, and I found out that if you had made the same investment in all of them, you would have lost about $300,000 on your bonds and you would have gained over $2,000,000 on your stocks; or for every dollar you had lost on your bonds you would have gained about eight on your stocks. Every well-managed company that hasn't made stock dividends or stock allotments during the past ten years has substantially that same history which I have just stated to you.

I further wanted to find out if it was not true that the market value of these stocks of railway companies had not been increasing more rapidly than the market prices of other things. It wouldn't do any good to take a concrete illustration here and there; I couldn't prove anything by that method; but I went to a disinterested tribunal.

The Bureau of Labor of the Department of Commerce and Labor has computed the average market prices of about two hundred staple commodities during the past twenty years. This series of representative prices shows a general trend from year to year. Following precisely the same method, W. C. Mitchell, of Berkeley, California, has computed the average market prices of forty representative transportation companies, including five telegraph, steamship and express companies. Neither of these computations were prepared with the idea of their having any effect whatsoever on any controversy pending before the Interstate Commerce Commission or any other tribunal; in fact, both were made before this case was brought. As a result of these statistics, made by wholly disinterested parties, we find that the average market prices of commodities at wholesale during the past ten years has increased about 11 per cent, and the average market prices of the five representative express, steamship and telegraph companies increased about 64 per cent, while the average market price of the forty transportation companies increased 106 per cent. This is a remarkable demonstration that the railroad business has been profitable in the eyes of the shrewdest, brainiest men of the country, those men who are willing to back up their judgment with hard cash aggregating millions of dollars annually. These men have stated in the market places of the country that in spite of the fact that commodities have advanced in price, yet railroad stocks have advanced even more rapidly than the prices of commodities, and far more rapidly than the stocks of express and telegraph companies.

During the next few weeks you will see lengthy statements in newspapers about the situation this month and that month, or in this or that period of four or five months. That is not fair. Railroad business is like all other industries: there are the ups and downs, the hard times and the good times. Here and there will be times when the market prices are down. Speculators now and then will be able to determine the price of any given commodity at any time, or of any railroad stock or industrial stock. Do you know what that speculator is trying to do? He is just trying his level best to find out what the permanent investor is going to do, and his success in the market places of the country depends on his ability to determine that. A long series of prices over a long period of time on a representative bunch of industrial and railroad securities tells in unmistakable terms the judgment of the permanent investor.

I tried to account for the fact that the market prices of stocks had gone up, while the market price of bonds had gone down. In no periodical publication in the entire country did I find any suggestion on that proposition, and so I wrote to a large number of prominent authorities for their explanation; and finally I learned from the Massachusetts commission that made an investigation into the cost of living and reported during the year 1910 that they attributed the decline in value of bonds to the increase in the gold output of the world. They said nothing whatever about the market value of stocks, and at first blush it seemed to me that if there was an overproduction of gold, it ought to have the same effect on stocks as on bonds; and practically the same idea has occurred to almost every man to whom I have suggested this. But just think for a moment. You know that if there is an overproduction of corn, the value of corn in other commodities goes down. If there is an overproduction of gold, the value of gold will go down, generally speaking. The value of the dollar depreciates with the increase of the supply of gold in the world. I find that during the past thirty years the visible supply of gold in the United States has doubled. I find that within the past fifteen years the visible supply of gold has increased fifty per cent; and I find that in every ten days at the present time we are producing as much gold as they did in an entire year in the seventeenth century. The man who has a million dollars or so to invest, either of his own funds or those of some great insurance company or other body that he represents, will know that if he puts it into bonds, forty or fifty years from now he is going to get back that money in a depreciated value; consequently he demands a greater inducement to put his money into bonds; in other words, he demands a higher bond rate before he will buy bonds. But when he puts his money into stocks he knows that at the end of forty or fifty years he will get back, not so many dollars, but property which will keep on increasing faster than the gold; for while the gold dollar is going down and depreciating, property is increasing. For the very same reason that the price of bonds goes down, the market price of stocks goes up. These facts have gradually penetrated the minds of the thinking men on Wall street and the great money centers of America, and they have been reflected in the market prices of stocks and bonds as I have described to you.

Further, gentlemen you can find from the Interstate Commerce Commission reports precisely the same facts without any trouble whatsoever. You have heard recently that the margin between the operating expenses and earnings of American railroads had been growing smaller and smaller from year to year, until they are up against a crisis; that the cost of supplies and labor has been advancing so rapidly that they are now making less net earnings than ever before. That falsehood has been circulated from one end of the country to another. It is absolutely not true. I have here the figures themselves, and for fear of misquotations, I am going to read them to you:

> These records of the market place reflect other facts which are easily ascertained from reports of the Interstate Commerce Commission. I have compiled the figures representing the net earnings of American railways

during the past twenty years, and after subtracting all operating expenses and all taxes, I find that for the year ending June 30, 1910, the American railways had a net income amounting to over $70,000,000 greater than ever before in their entire history. It is interesting and instructive to learn new methods of economy in operation. Mr. Brandeis has performed a great service to the American people in challenging attention to modern scientific methods of management which have recently been adopted by a few large industrial companies in the United States, but it is not necessary to prove what Mr. Brandeis has undertaken to establish. It is not necessary for the railways to revolutionize their methods of operation. Even under present conditions, we find this remarkable increase in net earnings which I have just stated. I find that the net earnings of American railways have not only increased in gross, but they have increased for every train hauled one mile, and for every mile of railroad. The net revenue per train mile in 1909 was 25 per cent greater than in 1900, and over 50 per cent greater than in 1890. The net revenue per mile of line in 1910 was 45 per cent greater than in 1900, and over 73 per cent greater than in 1890. Notwithstanding large issues of capital stock during the past decade, we find that the dividends of American railways have increased much more rapidly than has their capital stock. In 1909 the total stock in the country was 31 per cent greater than in 1900, while in 1909 the dividends paid were 129 per cent greater than in 1900, and the balance in the profit and loss account was 195 per cent greater than in 1900. These figures tell in more tangible, concrete, and conclusive form than any broad generalizations or expressions of opinion can possibly do, that railroading in the United States has been growing more profitable during recent years than ever before in the history of our country.

I will state briefly the circumstances that gave rise to my inquiry upon this case. Mr. Wallace was up at the state convention and tried to find me to talk for a few minutes about a matter which he said was of some importance; but that day so many of you Corn Belt fellows and graindealers over the state crowded in on me that he couldn't talk about business at all. Later I got a letter from him referring to the rate cases that were coming on at Washington, that the state was doing nothing, and that he thought the shippers of commodities from this section of the country ought to be represented. I had a brief conference with him. The upshot of the whole matter was that, due to the activity of that ceaseless worker and brainy man who is one of the most vital forces in all this western country, backed up by you fellows all over this Hawkeye state, I took up this task. I jumped into it hard. I dropped everything in my office, gave my law cases out to other fellows (I don't have so very many), and from the middle of August up to the present time I have been devoting my entire attention to this matter, with the exception of a very few days. I have spent seven weeks continuously in the court room. I don't believe any of you gentlemen have ever had a case that lasted that long. I have at times had from ten to fifteen stenographers helping me. I have made one trip to New York City, two to Washington, D. C., three to Chicago, and next week I have to go back to Chicago again. I have to prepare a 100-page printed argument, if possible, between now and the first of January. The State Board of Railroad Commissioners, at my request and the suggestion of several other persons, have furnished me with a complete copy of the record in the case, and they have also furnished me with one stenographer at each of these cities where I have gone, during the hearings. I have been compelled to prepare many of these exhibits while testimony was being taken in the court room. I think it would be no more than fair and just that this association should in sincere, positive terms express their appreciation of this help from the State Board of Railroad Comimssioners. They deserve your thanks.

One other thing along that line: I sugested to the Grain Dealers' Association that they ought to have a man there, too, and the result was that they sent Mr. White, of Nevada, a big, broad-gauged, fair-minded man and lawyer, and he has been associated with me during the past few weeks; and in addition to that the Grain Dealers' Association have contributed funds toward paying my fees. So I have an associate counsel, a stenographer, the record, and everything I need.

You gentlemen are looking farther than your livestock business when ou take steps to protect yourselves in this kind of a case. You are all interested in the development and growth of this mid-western country, and it is your business to see that nothing happens which will threaten the further advancement of this section of the United States, if you can possibly prevent it. You have been acting in that larger sphere, and at the same time you have been acting for your own concrete welfare. The railroads proposed an advance in livestock rates at first of over twenty per cent—close to thirty per cent—from the Mississippi river to the Atlantic coast, on all livestock originating west of the Mississippi river. Later they took off that advance and issued another rate, cutting that advance in two, making an advance of fifteen to twenty per cent. They have also made the same advance from Chicago to the Atlantic coast; and by statistics I find that close to forty per cent of all your cattle that go into the Chicago farket go on to the coast. Eastern buyers are there looking for them.

What will that advance do? It will tend to destroy eastern competition and prevent its development, and will further intrench the packers of Chicago in their position of supremacy. This will be true unless a similar advance is made on packing house products. They do propose an advance; but while the advance on livestock is around fifteen to twenty per cent that on packing house products is about ten per cent—a margin between the two of from five to ten per cent. But in addition to that, the Chicago packer has assured the public that the consumer will not have to bear the burden of this advance, mounting up to a fabulous sum of money. Now, the Chicago packer is generally given credit for having pretty good sense. He ought to know what he is talking about. Not very often has he been engaged in philanthropic enterprises. Who do you suppose is going to pay that advance? I have a sneaking suspicion that perhaps a few producers around this country will have to foot the bill. If the packer doesn't and the consumer doesn't, you must. Now, does the United States of America want to put an additional burden on this great livestock industry? Is that good public policy? I think the meat eaters of the United States will say, when that situation is thoroughly exposed, "No!" most positively.

Now I am through. The relations that have existed between you and me during the past few years have been most delightful. You have backed me up at every critical moment when I needed help; you have been true to me, and I love you all.

The convention thereupon adjourned to 2:00 o'clock p. m.

AFTERNOON SESSION.

The ratification of the nomination of directors in the odd-numbered districts was taken up, and the following declared duly elected: First district, J. M. Brockway; third district, David Muier; fifth district, W. G. Alcorn; seventh district, T. A. Thornburg; ninth district, Hamilton Wilcox; eleventh district, Will Drury.

The President: We will take up for a few moments the question of service on livestock trains. I went into that quite extensively in my report, and told you what we are going to try to do in the future. Several of the boys have filed complaints in regard to service since they came here.

Mr. Goodenow: The sheep men on the Northwestern have been neglected for some time. Only in a few instances has that road furnished double-deck cars. According to the ruling of the Interstate Commerce Commission, when they do not have those double-deckers, they are to furnish two single-deck cars at the same rate. A few days ago I went to our agent and ordered some double-deck cars. He told me he didn't know whether he could get them for me or not; and when I said I understood that if he couldn't get them he was to furnish me two single-decks at the same rate, he replied that he didn't know anything about it. I then went to the Illinois Central agent and asked him if I could get double-deck cars from his road. He said that I could if I would order them long enough ahead, but that the company only had three. I laughed and said that was a very few cars for a system of that size. Well, he said they might have a few more than that, but I wasn't sure of getting them. Then I asked him if I could get two single-decks at the same minimum weight if I should want to ship over his line, and he said yes, that they had already done that at that station.

Well, of course we must all understand that it costs $2 a car more when we have single-deck cars, for the reason that the terminal charge at Chicago is $2 per car. I think the shippers of sheep over the Northwestern line should begin to stir up the Northwestern people. I mentioned to our agent that I wanted him to be sure to get me those cars, as I was going to make a fight to have the interstate ruling held up, and I would like others to do that, so that the sheep men could get the benefit of the rule. I think the Northwestern has double-deck cars if they want to forward them.

Quite a good many complaints have come to me in the last three weeks about the run being very slow over the Northwestern road, and some of us have been talking about sending back the reports of these trains. We did that for a while, and the secretary tried to get more reports, but it seems that we didn't take interest enough. I believe if the railroad companies knew that we were making those reports, they would make a greater effort to get the shipments forward. I don't think it necessary that every little stop should be made a record of, but if there is any unnecessary delay between division points, it is well enough to mention the fact.

Mr. Brockway: I would like to add a word as to this matter of reports. It seems to me it makes all the difference in the world whether testimony is given as a matter of opinion or memory, or as a matter of absolute record. In all our hearings it has been a matter of considerable expense to bring witnesses here; but if we had a thousand of these reports to pass up to the commission, it is worth all the witnesses we could put on the stand, who often unintentionally misquote themselves. It is not only the car record, but the train record that you have in those reports, and I want to urge upon all the members to be sure to make out these train records.

Mr. Doran: I have been through the mill a little on this speed limit. In a short time the legislature is going to be in session, and I believe it will be possible to get a bill passed covering this matter. The suggestion of Mr. Brockway is timely, that you should have recent records of trains—not something three or four years old, but the actual record of recent trains from starting-point to destination. We had no trouble in getting our bill passed by the House of Representatives with but five dissenting votes, and three of those persons thought it necessary to explain their votes. It got into the committee on Railroads and Commerce in the senate, and it has never gotten out yet. I hope we will have a better committee this year. I think with a little united effort we will have no difficulty in getting the speed limit fixed. The same bill that we asked for here is the law in Nebraska. It has gone to the supreme court of Nebraska and been upheld. We lose more on this speed service than on freight.

Mr. Eisle: Often when we ship stock to Chicago we will get a letter back from our commission man stating that the train arrived late, and giving the hour and the minute that stock arrived at the chutes. If you will just pin that letter to your own record, it will make a complete record of that train. You can all get that from your commission firm by simply asking for it, and generally it will be sent without your asking for it; and the railroad company will never dispute it.

President Sykes: How is your service on the Rock Island?

Mr. Eisle: It is pretty good on Sunday, but they laugh at us if we ship any other day in the week, and the minister scolds us if we ship on that day. My wife says she is ashamed to go to church when I am loading stock. Last winter our service was very bad for a long while, and I don't know how it will be this winter, when they get a little frost on the tracks.

Mr. Ryan: I am glad to hear from Mr. Doran that some tribunal in the land has decided in favor of the speed limit for a stock train. I know that at the time Mr. Doran's bill was pending before the railroad committee of the house, every lawyer the railroads had would tell us that the bill was unconstitutional. I admit that the shipper of Nebraska has a decided advantage, because his market is in the same state; and I believe that a law could be made that would be constitutional with reference to state commerce, and I don't know but it could with reference to interstate; but the plea they made was that no law could be enacted that would be constitutional with reference to shipments from here to Chicago. I can't see why the Interstate Commerce Commission can't to some extent regulate the speed of trains carrying livestock, and I believe if that was brought to Mr. Thorne's attention, if it has not already been, it might be possible to get some relief; but I am not sure that any law passed by this state would cut much figure with reference to Chicago shipments of livestock.

President Sykes: I will say for the information of the convention that I have recently taken up this question with, I presume, as able an attorney as there is in the state of Iowa, and a man who is in sympathy with the people, and not with the railroads. He says he is positive that legislation enacted in the state of Iowa covering interstate business would not be binding on the railroads, and that they would give it no attention whatever on shipments destined to Chicago; that any relief on interstate shipments, must be had through the federal government. Within the state it would be all right, but shipments to Chicago are interstate traffic, and are governed by the interstate commerce laws.

Mr. Doran: I think there are some members of the thirtieth general assembly in the house, and if so, they will recall that that general assembly passed a law that any road or common carrier receiving freight in this state to go to a destination in this state or any other would cause every railroad company interested in the transit, from forwarding point to destination, to be liable for damages, provided those roads had an agency in this state. We could bring a suit right here in Polk county for damages for a shipment to North Carolina, if all the companies had an agency in this state. I was very familiar with the enactment of that law, and Judge Wright before he went on the bench had several cases under it, and its constitutionality was never questioned. The speed limit law in the thirty-second general assembly was worded in a way to come within the limits of the constitution. Two as good lawyers as there ever were in the state of Iowa said that it would hold good. I think there is no question, if you take that same bill that was up before the thirty-second general assembly, that you will never have to go before the supreme court. I am not sure whether the Nebraska law was worded to cover shipments to Kansas City or Chicago, but the bill defeated in the thirty-second general assembly arranged for just such contingencies.

The Secretary: There is just one thing I want to emphasize. Of course we can't determine whether a law is constitutional or not; but whatever we do on this matter before the legislature or before the railroads, must be based on definite facts. If you expect your officers to do anything to relieve the situation, you must furnish them with certain definite information which they can rely upon and which they can present. Only in that way can we get any attention either at the hands of the railroads or the members of the legislature. As has been mentioned here, when the question was up before the committees two years ago we had a mass of 600 or 700 reports, each of them giving the time the train was loaded and started, and the different points at which it was stopped, and the reason for the delay, if it could be ascertained. The railroad people had difficulty in meeting us before the legislative committee when we were fortified with that information, but if we go there without that, and simply state the condition as we know it to exist, they reply by submitting their train sheets on any particular day to show that such a condition did not exist. Mr. Goodenow sugests that it is not necessary to indicate the station at which a delay has occurred. With due deference to him, I want to say that I think it is necessary, because then we have something to put in opposition to the train report of that particular train. If a particular place is named where delay has occurred, it is up to them to show that that is not true, by submitting their train report; and if Mr. Goodenow has been careful in giving the exact place, it will correspond with that train report, and we disarm them in that way. We must have these reports furnished by you people who do the shipping if we are to make any impression at all. We got these in promptly for two or three months, and then they quit coming. We must have them again this winter, and beginning soon, if we are able to render any service to you in this matter; and I think it would be well for this convention to pass a resolution urging the members to fill out and mail back to the secretary a train report for each shipment, so that we will have that definite, positive information, giving the day, the date and the hour of every important incident connected with that shipment.

Mr. Rittgers: The thought comes up in this conection, just what rights have the stock men on trains? I have found some conductors that are the most gentlemanly persons you could meet; they have given me from their train book every stop, and the number of minutes they have stopped. Other conductors have absolutely refused to give me any information whatever; you couldn't find out how long they would stop at any definite point, if you wanted to make an examination of your stock or your cars.

Mr. Wilcox: I have had a little experience in keeping the time of the running of a train. I had a case in Cass County. I loaded some cattle at Wiota, and it was eight days before they were sold. We kept the exact time of that train at every station. They had every train dispatcher from Chariton to Lincoln on the witness stand with their time sheets, but when we got through they found that we had a good deal better time sheet than they had. You know at a good many of the little stations they don't have any man at night, and our witnesses testified that the stock was held at certain places; and when they came to produce their evidence, they had none at all, because of the fact that they didn't know what time the train arrived at those little stations along the road. So that if you undertake to keep the time, you ought to keep it accurately.

President Sykes: We have tried to impress upon you the value of filling out these train reports. However, the shippers scarcely ever accompany their shipments, and the only thing we can ask of those men is to fill out the report, giving the time when the stock was loaded, when it left the station, and then, as Mr. Eisle has suggested, get the time from the commission firm as to when it arrived in Chicago, and attach that to their report. But I agree with Mr. Wallace that it is very essential that we have these intermediate stops. If you have a damage claim, there is nothing that would be as valuable to you as that report, because if the report is properly filled out, it would show the movement of the train from the time it left your loading station until it was pulled up at the chutes in Chicago.

Is there a sheep man in the house who has been shipping to Chicago; and if so, what is your experience?

A Member: Mr. Fox and I ordered a double-decker, but they could not furnish it, and they gave us two single-decks; but when we got to Chicago they wouldn't accept them.

President Sykes: That is just what I asked the question for. I asked Mr. Wallace if he knew whether or not the railroads were adhering to the order of the commission on that particular matter, and he said he didn't. The order of the commission specifically states that they shall do this.

Mr. Wallace: You have to give reasonable notice. I would not want to say what that is, but you should make a demand on the agent in writing and specify about the time that you would want to ship. I should think that ten days to two weeks, if you could give that, would put you on the safe side. It might need to be greater in one case than in another, in order to enable them to get the cars to you.

A Member: I gave them thirty-six hours.

Mr. Thorne: The question of reasonable notice takes in several factors, and the commission itself was hedging on it. I believe the courts and the commission would say that if a week was an absurdly long time, considering the difficulties that you have to meet, and if a week was reasonable considering the difficulties that the railroad company had to meet, that would be reasonable.

Mr. Wallace: But if you know that some time within the next ten days or two weeks you will want to ship, it seems to me you could protect yourselves, in a measure at least, by notifying the agent, and then notify him of the exact date a little later.

Mr. Thorne: Please don't misinterpret my statement. They can not expect an unreasonable notice from you; it must be a just and sensible requirement. The commission did intend that you should have double-deck cars, and, considering all the factors in your business, you are entitled to them after what would be a fair notice. Mr. Wallace's suggestion seems to be very practical. If you give the agent notice ten days or two weeks ahead of about when you are going to want cars, and then give him a thirty-six-hour definite notice later, I think that you would be protecting your interests as well as the railroad's.

Mr. Ames: I would like to bring up a question that has been troubling the Iowa feeder. I want to know if there is any way in which to make the local packers of the state of Iowa buy the feeders' hogs? I don't believe there is a feeder in this state who sells his hogs to a local packer, or that he could if he wanted to. You can't sell your hogs to any packer in the state of Iowa, unless it is Ryan.

Mr. Ryan: Have you any reason to give why you can't?

Mr. Ames: Simply because they will not buy them from you.

Mr. Ryan: Aren't they healthy?

Mr. Ames: I mean that they don't want to do business with the feeder. One man represents the different packing houses in every single town from which they are handling stock, and he handles all the stock, and nobody else can do business without paying that man a royalty. Then they come up here and howl about what we are doing against the local packer. I wish to goodness they were all out of the state if they are going to treat us like that.

As far as making claims against the railroads is concerned, I I have had put a few claims put through and have been paid some money, but with one or two exceptions I have never received the full amount of my claim. I have made what I thought was an honest claim, but have had them tell me repeatedly that it is not their policy to pay claims in full; if they should, what is the use of having a claim department? They settle on a forty per cent basis or less. If you have a $300 claim, the chances are that your first offer will be about fifteen to thirty per cent of it, and they will finally try to settle on forty to fifty per cent.

BUSINESS MEETING.

The reports of the secretary and terasurer showed the association to be in very good financial condition. Total collections for the year were $5,358.82; disbursements, $5,257.02. The heaviest expense item was for attorney's feees in fighting the advance in freight rates. At the beginning of the year there was a decifit of over $700, which has been paid off. There are still some expense items to be paid in conection with the rate fight, amounting to from $800 to $1,000, but these are not yet due, and can be paid out of the receipts of the year 1911.

President Sykes: We will now have the report of the auditing committee:

Mr. Doran presented the report of the committee, as follows:

We, the committee appointed to audit the books and accounts of the secretary and treasurer of the Corn Belt Meat Producers' Association, report that we have examined the same and find them correct. Receipt and vouchers on file for all receipts and disbursements. Examination covers period ending December 13, 1910.

J. R. DORAN,
E. D. BAIRD,
WM. LARRABEE, JR.

Upon motion, the reports of the secretary, treasurer and auditing committee were adopted.

President Sykes: The executive committee, upon the authority of the board of directors, employed Clifford Thorne to protect our interests in this case, and the board have passed a resolution commending the work done by the executive committee. We would like to have that ratified by the convention at large. I think it is not asking too much, and it will show that the convention is back of the board of directors and the work done by this committee in employing Mr. Thorne to represent your interests before the Interstate Commerce Commission. If you feel so disposed, a motion to that effect is in order at this time.

Mr. Ryan: I move that the action of the executive committee and board of directors in employing Mr. Thorne to represent us before the Interstate Commerce Commission, or any other place where he was needed, be ratified by the members of this association. You got him for about one-fourth of what he was worth. Carried.

President Sykes: As the committee on resolutions is not ready to report at this time, we will proceed to the election of officers, and hear the report of the committee later. Nominations will be in order for president, to succeed myself.

Mr. Anglum: If this association had done nothing but develop men and give them a chance to show what there is in them, we would have done a good work. We have developed a man who is able to be the head of this association, and we are reluctant to part with him. We think we have pushed him out and built him up and made him what he is, in a measure. I nominate Mr. A. Sykes to succeed himself as president of this association. (Duly seconded.)

The Secretary: All in favor of the election of Mr. Sykes please indicate by rising to your feet. The election is unanimous.

President Sykes: I think you all knew from the tenor of my address that I felt that I owed it to my family and myself to step out of this position and go back to Ida Grove and take charge of my interests there and do something for Sykes once more. I would not be human if I did not appreciate the feeling the members of this organization have toward me, and I couldn't express in words my appreciation of the honor that you have bestowed upon me year after year in this association. I don't know what to say. I can resign, of course, and I have almost a notion to do it. I have never thought that Sykes was the only man that could make a success of this organization. But it seems that you have forced this upon me again. You have harnessed me, and I guess you expect me to work; that is what I have done in the past. And so I suppose I will have to proceed to look after the interests of the organization for another year.

You men possibly don't realize just what this means to me, not only as it concerns my own interests, but also in the way of the burden of responsibility in caring for an organization of this kind. Mr. Ames and Mr. Ryan know something about it. Every year this organization is getting larger, and the responsibilities greater. We have worked out a new system that, as I stated in my annual report, practically compels the man that is in charge of this organization to give it his entire time and the very best that is in him; if he does not, the organization will not maintain its proper standard.

Now, I will just say that in view of the fact that you have forced this upon me against my will, I will pledge you my word of honor that I will try to do my duty as I have in the past, but I shall expect you to do yours. If I am to handle this organization, it must be growing; and I can not keep it growing unless you assist me. At our next meeting, if the Lord spares my life, I want this organization to be one of the most magnificent that has ever graced the face of the earth, and it will be if we only continue on the line that we are now working on. We have now something like a thousand five-year memberships, signed up for from $2 to $10 apiece, and your officers are now in a position to figure ahead. If you hadn't had somewhere between $2,000 and $2,500 pledged at the time this Interstate Commerce Commission case came up, do you suppose we would have ventured to employ Mr. Thorne upon it? Not by any means. We are simply putting this on a business basis. And the board of directors say that if there is more money pledged than is necessary to carry on the work of the organization each year, they will levy and collect only such percentage of the amounts pledged as will be necessary to meet the running expenses of the association. So you are not going to be grafted on in any way, because the board will protect your interests. This year the full collection will be made, on account of the heavy expenses of the case that I have referred to. That case is not concluded, and there will yet be several hundred dollars of expense connected with it. But unless hereafter something unforeseen develops, I believe it will not be necessary to collect the full amount of those pledges.

Mr. Ames: There is a matter that I want to bring up at this time. I want to call the attention of the association to the fact that the past seven years—the life of this association—have shown the most unprecedented advance in agriculture and values in the history of Iowa. There are only a few classes of individuals that have not received a part of these advances, and I want to ask if, in your opinion, they ought not to be included in our prosperity. I refer to the minister in the pulpit, the teacher in the schoolroom and the clerk behind the counter. You can readily see that it costs them more to live the three hundred and sixty-five days in the year than it did seven years ago. Included in that class of individuals is the president of this association, who has labored faithfully upon a salary that is not commensurate with the dignity of his office. I believe I voice the sentiment of every member of this association when I say that it is our will that Mr. Sykes' salary should be increased sufficiently to in some degree compensate him for the work that he performs. It is not an easy position that he occupies, and the meager sum of $1,000 a year does not go very far today. I therefore move that it be the sentiment of this association that the board of directors increase the salary of the president of this association.

Mr. Ryan: I want to second that motion, and also to make a few remarks. I want to say that I realize that a man can't support his family on a salary of $1,000 a year if he hasn't any other means. The boy that I took into my office five or six years ago, at a salary of $30 a month, I am now paying within $60 of the salary that we are paying Mr. Sykes, and he struck me the other day for a raise; and for fear of losing him I believe I will have to give it, because, on inquiring around a little, I don't know as I can do any better. You can't hire a good farmhand for much less than what Sykes is getting; and in view of the fact that he was patriotic enough to stay with us and help us when we didn't have the means to do any better, we ought, now that the prospect looks good for money enough, to pay him somewhere near what he is worth. I really don't believe we ought to make it binding on the board of directors, but simply make a recommendation, because I have the utmost confidence in the board. (The motion was put by Senator Ames, and declared carried.)

President Sykes: I hope you people will not think that I was holding out because I wanted a raise in my salary. That wasn't what I was after, and I don't want it to appear in that way. This has been sprung on me as a surprise, but I certainly appreciate your feeling in making the recommendation to the board of directors.

Nominations are now in order for vice-president.

J. M. Brockway was nominated to succeed himself and was unanimously elected by a rising vote.

For treasurer, the names of Charles Goodenow, of Wall Lake, and J. H. Peacock, of Larchwood, were presented. Mr. Goodenow was elected to succeed himself.

J. A. Gunn, chairman of the committee on resolutions, then presened the report of the committee and moved its adoption, as follows:

RESOLUTIONS.

We wish to congratulate the association on this day of the seventh annual meeting, for the work done during the brief period of the association's existence.

We also appreciate the services of the faithful officers, Mr. Sykes, our president, and Mr. Wallace, the secretary, and wish again to express our gratitude to them for their untiring labor.

Nearly all the propositions and reforms advocated by this association have become national problems, and we urge the association to continue the good work.

Resolved, That we commend the action of our executive committee in employing Mr. Clifford Thorne to represent this association and the people of the state before the Interstate Commerce Commission, in the effort to prevent an advance in the freight rates on live stock and other commodities.

Resolved, That the experience of the past year has demonstrated most completely to every fair-minded citizen the necessity of a commerce counsel employed by the state to represent its interests in transportation matters. We urge upon the incoming legislature the necessity of enacting a law which will create such an officer, and the appropriation of sufficient funds to enable him to properly discharge the duties of the office.

Resolved, That the spread of agricultural knowledge is needed by this state more than any other one thing. We commend the work done by the Extension Department of the Iowa State Agricultural College in holding short courses at the college and in various parts of the state. We believe the state has received greater material benefit from the money spent for the Extension Department than from any other like sum ever spent in any like way. We urge upon the incoming legislature the necessity of increasing the amount of money available for the Extension Department, thus making it possible for it to increase the number of short courses held in the various counties of the state. The legislature should also provide for a short course to be held at the Agricultural College during the summer vacation, for the special benefit of the teachers of the rural schools of the state, with a view of giving them information which will enable them to teach the principles of agriculture to their pupils. We also favor the enactment of a law by the incoming legislature looking toward the establishment of secondary schools of agriculture in the various districts of the state, with the ultimate purpose in view of establishing an agricultural high school within driving distance of every farm.

Resolved, That the state of Iowa and the nation at large owe a debt of gratitude to the senators from Iowa for their heroic work in connection with the amendments to the interstate commerce law enacted by congress last winter. That portion of the law which authorizes the Interstate Commerce Commission to suspend an advance in rates until the reasonableness of the advance shall be proved, and placing the burden of proof on the railroads, was drawn by an Iowa senator and forced to a successful vote by both of them; but for their patriotism and ability in this matter, the railroads would now be able to advance rates whenever they desired, and without justifying themselves to anybody.

Resolved, That the death of Senator Dolliver was a calamity to the state and nation. He had become one of the most powerful figures in the national senate, and his voice was always raised for the common people. We extend to his family the sympathies of the association. We urge upon the legislature and the people of the state the necessity of elcting to his chair a senator who will stand for the things that he stood for and fight for the things that he fought for.

Resolved, That we believe that there should be more stringent laws passed by congress relating to federal inspection of grains, along the line advocated by the Co-operative Grain Dealers' associations.

Resolved, That we are opposed to ship subisdies in any form at this time.

Resolved, That we ask that our legislature, as well as our people of Iowa, go forward with the movement for better wagon roads in Iowa.

Resolved, That the service of the railroads in shipping stock to market is very often extremely unsatisfactory, causing great financial loss to shippers, and we demand that the railroads, as common carriers, be obliged to furnish facilities to get stock to market on good schedule time and in good condition.

Resolved, That we are glad to have had the help of the Iowa Railroad Commission during the recent rate hearing, in supplying a stenographer for Mr. Thorne, and in purchasing the transcript of the proceedings.

Resolved, That we wish to express our appreciation to the Co-operative Grain Dealers' Association for their assistance and influence in the recent rate case hearings; also for their co-operation in advancing the interests of the farm and people of Iowa.

Resolved, That we observe the demand of the manufacturing districts for the admission of agricultural products into the United States free from tariff duties. For nearly fifty years we, as consumers, have paid excessive prices for manufactured products, hoping to build up a home market. Now that the home market is likely to become a reality, we insist that so long as our nation is committed to a protective tariff policy, the products of agriculture should receive the same measure of protection as do the products of the factory. The grain and the meat produced on the farm are the finished products of the farmer. They are the result of a combination of skill, capital and labor, and as much entitled to the benefits of a protective tariff as the products of the factories of New England.

The report was unanimously adopted.

Upon motion of Mr. Smith, the meeting thereupon adjourned *sine die.*

DIRECTORS' MEETING, DECEMBER 14.

At the meeting of the directors, following the adjournment of the association, H. C. Wallace was re-elected secretary. President Sykes, Secretary Wallace and Director Thornburg were appointed as the executive and legislative committee, with full authority to represent the association and speak for it.

PART V

PROCEEDINGS

STATE AGRICULTURAL CONVENTION

WEDNESDAY, DECEMBER 14, 1910.

The convention was called to order at 9:30 a. m., by Hon. C. E. Cameron, President of the State Board of Agriculture.

Prayer was offered by Mr. G. H. Van Houten of Taylor county.

Vice-President Brown presided while Mr. Cameron gave the following address:

PRESIDENT'S ADDRESS.

C. E. CAMERON, ALTA, IOWA.

The report of the 1910 Iowa State Fair which the secretary will make to you is of a great deal of satisfaction to us. You have all heard the old legend of the salamander that could not be burned up. So we feel in regard to the Iowa State Fair and Exposition, rain cannot do us up. There was rain every day of the last week, and the secretary's report will show the exhibits and attendance were the greatest in the history of the fair. Mr. Simpson in his report will take up all the details of the different departments, so it will be useless for me to repeat them.

The fair is fast becoming what its supporters have always maintained it to be—a great educational institution. This was forcibly demonstrated this year by the quality of the exhibits and the great interest the people had in them. Why would people come to the fair under the conditions that existed there this year if it was not for information? This is a progressive age. Now days the people have in them what we used to say about the Missourian—he had to be shown; now we all have to be shown. We can send our boys to the agricultural schools; we can attend the winter short courses; but it is at this great annual exhibition that we can feast our eyes on the practical things that have been produced by scientific study. And that accounts for the increase in our gate receipts each year. This exposition is not confined to the farmers alone; it has on exhibit something that will interest every person who cares to be interested. The resources of our state are expanding; new industries are springing up all over the state; hence the reason for adding the word "exposition" to our fair. We want all these new enterprises to make exhibits at the fair, and in this way we can have all the people interested in this great educational institution.

Some people may wonder why with these great institutions of the state growing, new manufactures starting up, the people most prosperous, standing at the top on education, yet the state is decreasing in population. We have all read in the papers a great many explanations of Iowa's decrease in population during the last decade. We all know it is not because the resources of our state are becoming less; we know the fertility of the soil has not become exhausted. The possibilities of this great state are in its infancy; we have not commenced to reap the results that are in store for us when we get to that point in intensive farming. In my opinion, one of the factors in the decrease of population in the state during the past ten years is the fact that the prosperous farmer is crying for more land and each year adding to his already large holdings. It is the productiveness of this land that allows him to keep buying land, land, land, until they have advanced the price of this fertile soil. The young man starting out in life does not feel like going in debt to the amount of from sixteen to twenty thousand dollars for a quarter section of Iowa land, when father bought land a few years ago for from six to eight thousand dollars for a quarter section. Hence the young man is looking for cheaper land, and to the north, south or west he goes for cheaper homes. It is these young men, who are raising families that naturally should increase the population of our state, who are leaving. With the improvements in all kinds of farm machinery, father at home has been able to carry on the increased acreage that he has accumulated, instead of dividing it up with the boys and keeping them at home. I think we have about reached the turning point. These men who have accumulated these large farms are getting old and passing away, and the farms will have to be divided into smaller tracts. And even the men who have large holdings and have been renting these lands, at the price this land is valued today the owner is not receiving to exceed three per cent upon his investment. It is on the increase in the price of his land that he is looking for his profit. This land—the same as we say in regard to water—is bound to find its level. So when that time comes the investor must look to the land to bring him a reasonable profit on his investment; and in that case we must divide up our large tracts into smaller farms and intensive farming will solve the problem.

I am heartily in favor of the present agitation to advertise Iowa. We have done none of this for years. When the railroads had their granted lands, and the speculator had land, then Iowa was boomed.

From an advertising standpoint Iowa has lain dormant for years, but the recent census returns have awakened us from our Rip Van Winkle dreams of the last ten years. We have allowed the emigrants to pass through our state to take up their residence in the western states, without raising our voice in behalf of the greatest state in the union. You see the result—Iowa's decrease in population. But things have changed; this is the age of boosting, and from now on we are boosting for Iowa and in the next ten years will show an increase instead of a decrease in our population.

I wish to refer briefly to some matters of interest for the future success of the Iowa State Fair. The equipment in some of the departments is inadequate to properly house and care for the exhibits, not only from the exhibitors standpoint but also from that of the patron who comes from a distance. If the weather is bad they are unable to see the exhibits under the present conditions. Especially is this true of our machinery exhibit, which is one of the most interesting on the grounds. Here the progressive farmer spends a great deal of his time looking up the improvements along his line of work. We should be able to complete some more of the horse barns. This year we had part of the horses housed in tents and small buildings where it was almost impossible for the visitors to pass through; hence dissatisfaction, not only among the exhibitors for placing their valuable horses in quarters of that character, but among the visitors who do not feel that they are rightly treated to pay to see the exhibits and then not be able to do so. Our cattle barns are getting old and it does not pay to repair them; hence at least two new barns should be built this year, conforming to the plan already mapped out. When these barns are eventually completed they will all be under one roof, so that regardless of the weather the visitors can come to the fair and see the exhibits. Another important improvement should be building arbors on the main walks leading from the Rock Island and street car stations to all the main buildings. This, to my mind, would be a very profitable investment, and the people would know when they left home that they could see all the exhibits without exposing themselves to the weather. The legisltaures in the past few years have been very generous to the fair in the way of providing buildings for the housing of exhibits, and I feel they have no regrets for the appropriations they have made for this purpose; they feel we have been doing a great work along educational lines, and I believe they are willing to continue the good work.

The following committees were appointed by the President:

COMMITTEE ON CREDENTIALS.

George Purdy of Cerro Gordo County, J. W. Edwards of Henry County, and A. R. Corey of Kossuth County.

COMMITTEE ON RESOLUTIONS.

J. P. Mullen of Pocahontas County, C. J. Martin of Greene County, and E. M. Wentworth of Marshall County.

Secretary J. C. Simpson gave his annual report as follows:

SECRETARY'S REPORT.

J. C. SIMPSON.

The closing days of the year 1910 mark the beginning of a new era in agriculture and agricultural education for the state of Iowa. From this time on there is going to be more said and done for the state and less attention paid to increasing the population and developing the resources of other states. In other words, we believe the time has arrived when we must plant the seed and cultivate our own fields more intensively, instead of planting the seed and leaving the field to care for itself while we rush off to some corner of the earth to do our cultivating.

Iowa farmers have, upon the whole, been blessed with bountiful crops in the year 1910. Her factories have had an increased demand for their output. More public improvements have been made in the cities and towns of the state than in any previous year. In fact, the prosperity of the state for all classes continues to be a marvel to our good old Yankee relatives down east, who cannot understand why a state which has been losing in population can continue to increase in wealth. The products of our farms are not bringing as high prices as they were a year ago. The market for cattle and hogs is considerably lower, which should, by all methods of reasoning, reduce the price of food products to the consumer, as it already has to some extent. Whether this cost will be lower in the same proportion as farm products remains to be seen. The farmers of Iowa will not complain of the lower prices, as they have been receiving the maximum prices for their products for several years past and feel that the present drop is only temporary.

The western states have been making rapid strides in the production of fruits, but Iowa farmers need have no fear for competition from that source in the growing of corn. The corn crop of America will always be, as it always has been, the staple crop of those states tributary to the Mississippi basin. Seven states, viz.: Illinois, Iowa, Missouri, Nebraska, Indiana, Kansas, and Ohio, produce yearly about sixty per cent of the corn crop of America. These seven states, with Texas, are also the great beef producing states. There is no reason to be alarmed that, in our enthusiasm for better and more intensive system of farming, there will be an overproduction of food products. The increase per acre of farm crops in the past ten years has not been nearly so marked as has been the increase in population. Indeed, in the matter of our corn crop but very little, if any, increase has been noted. Iowa reports for 1909 show an average yield in this state of 34.6 bushels per acre. The report for the year 1900 gave us an average yield of 40.3 bushels per acre. Going back over the reports still farther we find that exactly thirty years ago, or in 1880, the average yield of corn per acre was reported as 41 bushels. This clearly indicates that no advancement has been made in the yield per acre in the years gone by. The acreage of corn today in Iowa is nearly double what it was thirty years ago, indicates conclusively that with increased acreage comes smaller yields per acre, largely by reason of carelessness in the selection of seed, preparation of the ground, and cultivation of the crop. There are a great many farms and fields of corn that return yearly from fifty to eighty, and even one hundred, bushels per acre. Almost any good farmer is disappointed if he does not receive over fifty bushels. This would indicate that there is considerable bad farming going on within the state to keep the average yield to such a low figure.

A few weeks ago when we received the report on Iowa's population from the census bureau at Washington we were confronted with figures which show a decrease in the population for the state in the past ten years of three-tenths of one per cent, and that while the cities and towns had actually shown an increase, the loss of rural population was greater than the increase made by the cities and towns. Immediately following this report there appeared in the headlines of the newspapers, throughout the country, a question asking "What is the matter with Iowa?" We believe the most intelligent answer which can be made to this, is that Iowa has been too prosperous. Farmers have been seeking for an investment of surplus money; he buys his neighbors lands and adds it to his own farm, his neighbor emigrating to some western state where he can purchase cheaper lands. Farm lands are still increasing in value from year to year, the advance never being more marked than within the past twelve months. But, it has been the consolidation of farms, and the increased holdings of the individual, that has caused a marked decrease in our rural population. Wallace's Farmer says: "The very productive capacity of Iowa soil has tended to decrease the population. The farmer, when work becomes a burden, and help in the house impossible, believing that the rent of his farm will keep him in comfort off the farm, moves to town, taking his younger children with him. This explains why there are some sixty thousand less children in attendance in the rural schools of Iowa than ten years ago." Continuing, Mr. Wallace farther says: "When the census returns are all published it will be found that Iowa has not been peculiar in this reduction of rural population. It will show a decrease in the older counties of Missouri, Kansas, Nebraska, and to some extent, southern Minnesota and southeastern South Dakota."

FARM STATISTICS.

The first reports under the new statistical law were received by the department the fore part of the past season. The data was gathered by the assessors, at the same time the regular yearly assessment was made, upon blanks prepared and sent out by the department of agriculture. These statistics will be of great importance to the student of agriculture, as they contain considerable data never before gathered. Besides the acreage, average yield, and total yield of farm crops for the year 1910, it will give the total number of silos in the state, by counties, 1,556 in number, or an average of about one to every 130 farms. It will be interesting to note what the next report will show with reference to the number of silos in the state. It is my belief that more silos have been erected in the past year than there were on the farms one year ago. Ten years ago the manure spreader was just coming into its own; today statistics show over 60,000 in use on the farms of Iowa, or about one to every three and one-half farms. Thousands of miles of tiling have been laid within the past ten years. The reports show that the fields of Iowa contain over 124,000 miles of tile. Data was also gathered showing the average monthly wage paid farm help during the year. This is found to be $26.50, which of course includes board, sometimes washing, and usually the use of a horse.

In the farm reports gathered we find the figures show that Iowa's corn crop for 1909 was 308,000,000 bushels, or 18,000,000 bushels more than the government estimate gave us at the close of the year 1909. The average yield is shown to have been 34.6 bushels, against 31.6 credited to our state by the government experts. As the information for these tables was secured from every farm in the state we will have to consider it authentic. For the first time the acreage and yield of alfalfa has been tabulated. While the total acreage for the state is not large—(23,000 acres)—the reports indicate that in several of the western counties it is growing in favor among the farmers. Hancock county leads with 5,565 acres; Pottawattamie second with 3,935 acres; Menona third with 3,255 acres; Mills fourth with 2,530; Fremont fifth with 1,819, and Woodbury seventh with 1,639 acres. The average yield per acre for 1909 was shown to have been about three tons per acre. But very few people are aware that popcorn is grown to any extent in Iowa for commercial use. There is quite a large acreage in the counties of Sac, Ida, and Pocahontas, Sac leading with over 3,400 acres. This corn is harvested and stored in the crib usually for one year before being marketed. It has proved to be a very remunerative crop to those who are growing it. The figures for the live stock tables show there was on the farms of Iowa, on January 1, 1910, 1,322,464 horses; 51,654 mules; 4,637,537 cattle; that the number of hogs kept on the farm for the year 1909 was 6,312,634, and of sheep 888,726. The most remarkable, and in many respects the most valuable data gathered, is with reference to the poultry industry of the state. Figures show there was on the farms of Iowa in the year 1909 over 22,000,000 fowls, or an average of about 110 to the farm; that the farmers' wives received over 84,000,000 dozens of eggs during the year. The poultry and egg industry in Iowa for the year is of much greater importance than it is generally thought to be. It is equal in value to the entire potato crop of the states of Colorado, Utah, Wyoming, Montana, Idaho, Washington, Oregon, Nevada, with the state of California thrown in for good measure; or of the six New England states, including Maine, which is generally recognized as the greatest potato yielding state in the Union. The possibilities of raising poultry for profit on the farms of Iowa are well worth the time and consideration of every farmer. The aggregate net yield returned in Iowa is greater than that received from the combined value of the following farm crops, wheat, rye, barley, flax, potatoes and wild hay.

GOOD ROADS.

The question of better roads and highways is still uppermost in the minds of the people. We can all get together upon common ground when the subject of better roads is discussed, but beyond this point, or when we come to discuss the best plan to adopt, there is a great diversity of opinion. If I was not a born optimist I would almost despair of ever seeing laws enacted that would eventually give Iowa as good, or better, roads than any state in the Union. I am of that small minority who believe that this can never be accomplished without adopting a plan that will provide for a county and state engineer system so that the work of road construction can be carried on with some semblance of uniformity and regularity. I am one of that still smaller minority who believe farther that permanent roads can never be realized or constructed without the expenditure of money. A few days ago I clipped from an Alabama paper a very interesting item which reads as follows: "Road Bond Issue Carries in Mobile. The proposition of bond issue for $500,000.00 for road improvement in Mobile County carried." Think of it; a bond issue of one half million dollars for road improvement voted by the people of a county in the state of Alabama, and we people here in Iowa trying to build permanent roads by volunteer labor. The King road drag is the most important and indispensable tool for the working of roads ever conceived, but the people of Iowa, or of any other state, can never build permanent roads with the King drag. They can greatly improve their present condition, which they are doing right along, and if every land owner or occupant would drag the road running past his farm, not occasionally but systematically and when they need it most, we could have very good roads all over the state by the use of the King drag. But they will not do so; they may for a time, as they have done along the River to River road the past season, but let there be a lull in the energy put forth by the enthusiastic boosters for this work, and note how systematically the dragging will be done. What kind of streets would a city have which left their care and improvement to the individual property owners. You cannot expect better results in your roads by volunteer labor. A permanent road, as I look upn it, is not necessarily built of macadam or brick, but a piece of road that has been constructed only after proper plans have been made by a competent person, who necessarily must be an engineer. I know the permanent road advocate in this state receives but very little sympathy at the present time, but I want to go on record as predicting that each year will see many recruits for this plan and that before many years the present small minority will be a large majority; then, and not until then, can we hope to see much improvement of a lasting character in the roads of Iowa.

BUREAU OF PUBLICITY AND IMMIGRATION.

In my reports of one and two years ago I discussed briefly the need of a state bureau of publicity and immigration, believing then, as I do now, that unless some action is taken to counteract the aggressive campaign of publicity and advertising being carried on by other states, transportation companies and associations of various kinds, which are now and have been for years past, flooding our state with attractive and interesting literature, setting forth in a most pleasing and descriptive manner the advantages and opportunities offered to home-seekers in their particular state or community, Iowa would in time pay for her indifference. Therefore, I have no apologies to offer for agian discussing a subject which, to my mind, is of far more importance to the future welfare and prosperity of the state of Iowa than any other that will come before the next general assembly.

In again referring to this question of publicity and advertising I am not unmindful of the fact that it will be frowned upon by many and will probably be looked upon by a few legislators as a needless expense to the state without any particular benefits resulting therefrom. To a business man acquainted with the value of advertising and its importance to a successful business career, its need is at once apparent. Advertising is the foundation around which, or upon which, all industries are built. It can be just as useful when applied to the state, for how else can we hope to let the world know of our wonderful resources and opportunities if we do not make an organized effort to keep them before the people. No matter how rich our soils are, or how successful our factories may be, if we do not make these facts known their value as a state asset is largely lost. I have been greatly pleased the past year to note the increased interest manifested from all parts of the state upon this subject. When it was first discussed a few years ago there was a disposition to look upon it as a hobby of some particular person, but I am glad to see that at the present time it is being discussed upon its merits and strongly advocated by many of the leading papers of the state; this being especially noticeable since the census report shows a decrease in the population of Iowa. Only a few days ago I read an article on the editorial page of one of Iowa's leading papers, which in itself was a very strong argument in favor of a bureou of publicity and immigration. The article was headed "Rubbing It Into Iowa," and follows:

"It is rubbing it into Iowa a bit when other states advertise their natural advantages at great expositions by publishing the story of men who could not accumulate more than a few hundreds of dollars by farming in Iowa, but who accumulated thousands elsewhere. That is what is being done at the National Land Show at Chicago. At Chicago the most effective single piece of advertising is the promotion of Arkansas agricultural lands by the story of an Iowa man's success in cultivating them. That is bad enough, but it is much less satisfactory to learn that there is nowhere in that great land exhibition an exhibit, or an advertisement, of what Iowa offers to the homeseeker. Hundreds of men, backed by ample funds, are there busy promoting the interests of other agricultural districts, but there is not a single individual there telling the hundreds of thousands of visitors of Iowa's advantages. If Iowa is to grow and keep pace with other states in development it must cut up its large farms into smaller farms instead of uniting them into still larger farms. It must encourage men with smaller means to come into the state and cultivate forty and eighty acre tracts. It must stimulate intensive agriculture instead of extensive. Iowa cannot accomplish these things if it does not make known its advantages far and wide. It cannot expect growth and development if it sits quietly by while other states are making a big noise about themselves and fighting aggressively for new farmers; in short, Iowa *needs to advertise.* That fact was painfully forced upon Iowans who visited the land exposition in Chicago."

Had this article, along with others equally as pointed, been written and published two years ago, there is no doubt but what Iowa today would have a well organized bureau of publicity and immigration. It was my pleasure to visit the land show referred to in the above article and upon this visit I gathered an armful of booklets, pamphlets, leaflets and other advertising literature. If we are to believe one-half of what we find in the advertising literature set out by other states, transportation and development associations, etc., we will learn that Louisiana is the banner corn state, producing crops yielding from 75 to 100 bushels per acre with one or two additional crops on the same land in the same year; that Virginia beats the world for its luxuriant pastures; that Alberta is the only place on the map where oats can be grown successfully; that if you want to grow onions and other garden truck you will have to move to Texas, or if you want to grow apples it would be useless to think of doing so outside of the states of Colorado, Idaho, Washington, or Oregon; that Kansas has a monopoly on all the soil suitable for growing alfalfa; that if it was not for the wheat grown in the Dakotas and Minnesota we would grow hungry for bread; that the state of Wisconsin furnishes the only ideal location for dairying; that sheep can be raised successfully at present only in the states of Wyoming and Montana; that if you do not live in the state of Missouri it would be useless to endeavor to raise mules; that without New York's product we would have no cheese; that the state of Massachusetts has a corner on all sole leather used in the manufacture of shoes; that without the coal in Pennsylvania and the oil from Oklahoma we would have to sit in cold, dark rooms. In fact, there is not much left for the farmers of Iowa except to grow hogs, and we are of the opinion that if Iowa does not wake up and file a claim through a bureau of publicity and immigration this honor will soon be claimed by others. It would be eminently proper then to ask the question, "What is the matter with Iowa?"

There should be no jealousy existing between counties and cities of the state in this work. A bureau of publicity and immigration is for the benefit of the whole state, for every county in the state, and for every city and town in the state. Because some organization or some one locality is active in its support is not sufficient reason why it should be opposed or discredited by any other locality. What we need in Iowa is a new spirit, or, as Mr. Wilson of the Greater Des Moines Committee would say, "Think as a unit." And we know of no better way to bring about this state of affairs than through a well organized bureau of publicity that would collect and disseminate such information as would cause the people of the state to think as a unit.

All farm data goes to show that the smaller the field the larger may we expect the average yield. Therefore, unless steps are taken to reduce the average size of the farms in Iowa by increasing the number of farmers, land values will cease to increase, as a fair rate of interest cannot be realized on the value of the land unless greater yields are received. The average yield of farm crops in Iowa today does not correspond with the average price of farm land. There are many farms in Iowa of high value which are operated in a manner that returns a good rate of interest on its present valuation. There are also a great many small tracts returning yearly almost unbelievable profits. If we had had a bureau of publicity clothed with authority and provided with ample funds to collect these facts and put them into printed form for distribution at home and abroad, it would not only open the eyes of a great many of our own people but would be the means of attracting thousands of settlers to our state. The presentation of the claims of the various states and communities is bewildering. These claims are presented by displays, personal conversation, printed matter, lectures and picture shows, and would be equally effective with people of Iowa as of any other state. We must not let ourselves be deceived by the thought that with all our great resources we can close our doors to the outside world and expect strangers to seek us out. Every resident of Iowa is familiar with the motto, "Of all that is good Iowa affords the best," but others do not always see us as we see ourselves. Only recently the United States census bureau gave out a report showing that of all the states in the Union Iowa is the only one to show a loss in population within the past ten years. This is not good advertising for Iowa and will not be the means of bringing more farmers or investors to our state, for usually people are a little skeptical of any community, city or town, which is losing population, as a place to engage in a new enterprise. While we people of Iowa are not greatly disturbed over the report showing our loss in population—at least not for the present—how does it look to the stranger who is seeking a new location to engage in farming? Unless we are active in our efforts to acquaint him with the true conditions in Iowa, won't there be some doubt in his mind that perhaps there is something wrong with Iowa after all? How will he know that our farmers have become so prosperous that they are buying the land from their neighbor to add to their holdings, and that this has been the most potent cause for our decreased rural population? Again, how is the stranger to know that he can receive as large or larger returns from his tract of land, either large or small, in Iowa, as in any other location on earth? He does not know that we have in this state apple orchards which return net profits of from $500 to $1,200 per acre; neither does he know that he can raise tomatoes that will return a profit of from $1,500 to $2,500 per acre; that he can raise onions that will return from $600 to $1,200 per acre; that we can show him conclusively where wheat has yielded at the rate of eighty-eight bushels per acre; that men are receiving a profit of $100 per acre by raising pottatoes; that we have corn yields that run as high as 150 or more bushels per acre. All these things would be very interesting and attractive to the homeseeker, and when they occur in other states, they let the whole world know of it. Here in Iowa we traesure it as a bit of news that is of no particular importance, and which receives no world wide publicity for the reason that we have no bureau whose particular mission it is to let such facts be known. Our indifference to our resources was very aptly stated by a resident of the state of Oregon who was interviewed in this city by one of the newspaper men a few days ago. He said in part: "It strikes an outsider that Iowa ought to do more for the promotion of their state wide interests than they do. You have much to talk about, but you don't talk."

It has been suggested that a Bureau of Publicity and Immigration should be placed with some one of the state departments, possibly the Department of Agriculture. As to this we have no concern. We believe in publicity, and no matter where it is placed, we will be just as strong and earnest in our support of it. We want most of all to have it considered upon its merits and not be handicapped by anyone or any department. The cost of such a bureau should be secondary. It should not be considered as an appropriation bill, but from the standpoint of usefulness and material benefit to the state in increased population and farther development of her resources.

AGRICULTURAL EDUCATION.

We cannot pass over this topic without saying a word of commendation upon the action of the State Board of Education in adding the two year agricultural course at the Iowa State Agricultural College at Ames. It has seemed to us for a long time that there was a demand, or need, for a shorter course of study in the regular college work—in other words, a poor boys' course. We have no doubt, as the years come and go, this will prove to be the most popular course at the school.

The filing of the report of the State Board of Education a few days ago, giving the estimate of the needs of the Agricultural College for the next two years, reminded me of the fact that unless their prayer for a large support fund is granted the task of keeping the faculty will be harder than ever. It is shameful when you think of the number of excellent and able young men who almost monthly resign from their positions at our State College to engage in more remunerative work. It is not only shameful, but a disgrace to the State of Iowa, to acknowledge that she cannot compete with other states, or individuals, for the talent needed most at our Agricultural and Mechanical College. This, we presume, is equally true of the University at Iowa City and the State Normal School at Cedar Falls, but we speak only of the school at Ames, with which we are more familiar. If the state expects only cheap instructors it would then be useless to increase the support fund. But I know, and you know, that we expect the State Board of Education to maintain the highest standard of excellence in their corps of instructors, and they can only do this by having a support fund sufficient to enable them to meet, at least in a measure, competition.

The taxpayers of Iowa are not paupers and know that it takes money to hire brains, and brains is what we demand of our instructors at Ames.

STALLION REGISTRATION LAW.

Since the enactment of this law by the Thirty-first Iowa General Assembly, similar laws have been enacted by many other states. Wisconsin, we believe, was the first state to enact a law requiring the issuance of a state certificate for all stallions offered for public service. Iowa next recognized the importance of such a law for the improvement of the horse breeding industry of the state, and following rapidly upon the heels of the Wisconsin and Iowa laws similar action was taken in the States of Illinois, Minnesota, South Dakota, Nebraska, Kansas, Indiana, Idaho, Pennsylvania, New Jersey, etc. The one good feature of the Iowa law, which we believe to be the correct principle, is that it does not recognize any other than pure bred stallions, while in most of the other states named certificates are issued to cross-bred, grades and mongrels, as well as pure bred. However, the Iowa law is lamentably weak in four particulars, which should be remedied by the Thirty-fourth General Assembly:

First, The Iowa law does not require the examination of the stallion by a competent veterinarian before the state certificate is issued, as required in almost all other states. Under our present law the secretary of the department of agriculture must issue the state certificate, regardless of the condition of the stallion, if upon examination the certificate of registration issued by the stud book association in which such stallion has been registered is found to be correct. By reason of the rigid examination required in other states before state certificate is issued, and the barring of all animals from public service, regardless of breeding, showing signs of any infectious, contagious, or transmissible disease or unsoundness, Iowa has become the dumping ground for a great many of these unsound stallions. The Iowa law should be so amended that the presence of any of the following named diseases would disqualify a stallion or jack from public service: Cataract, amaurosis (glass eye); periodic opthalmia (moon blindness); laryngael hemiplegia (raring or whistling); pulmonary emphysema (heaves, broken wind); chorea (St. Vitus dance, crampiness, shivering, string-halt); bone spavin; ringbone, navicular disease, bog spavin; curb, with curvy formation of hock; glanders, farcy; maladie du coit; urethral gleet; mange; melanosis.

Second, The law should provide for an annual renewal fee as a precaution against the misuse of the state certificate by unscrupulous parties and to enable the department of agriculture to keep the list of stallions active and up to date. This will be absolutely necessary if the amendment with reference to the soundness of the animal is passed. The renewal clause will bring about a more rigid enforcement of the law.

Third, Section four of the law, with reference to advertising for public service a stallion for which a state certificate has not been issued, should be so amended as to include all newspaper advertisements as well as hand bills or posters.

Fourth, The general provisions of the law should be so amended to include jacks as well as stallions.

If the law is amended to require the examination of stallions a clause should be inserted providing for a maximum fee to be charged by the veterinarian making such examination, and a further provision that in the event of such enactment the examination shall include all stallions for which state certificates have been issued and are still being offered for public service within the state, said examination to be made before renewal is issued.

The law does not contemplate that the department of agriculture shall prosecute violations. Under the Iowa statutes defining the duties of county attorneys the prosecution for the violation of any state laws taking place in his county is made a part of his duties. As a rule complaints made to the department come in the form of letters notifying us of some violation of the law but asking that their names be withheld from the party upon whom they have informed. While the department cannot undertake to prosecute persons violating the law (not being authorized to do so,) they will gladly turn over to the proper official any evidence which they may receive. When notice of a violation is received by the department the guilty party is furnished with a copy of the law, with a letter calling his attention in particular to the penalty section. There are persons who will inform upon the owner of a stallion for not complying with the law and not assist in collecting the proper evidence for a prosecution, but will condemn the department as not attending to its duties or the law as being useless. Such complaints are unworthy of notice and merely show plainly the character of the person making them.

Since the taking effect of the present law, July 4, 1906, to May 1st, 1909, there were issued 5,329 certificates and 722 transfers. From May 1, 1909, to May 1st, 1910, there were issued 1,020 certificates and 369 transfers, making a total to May 1st, 1910, of 6,349 certificates and 1,091 transfers.

Without the annual renewal feature of the law there is no way for the department to calculate the number of stallions in actual service, or what percentage of stallions being offered for public service are pure bred. When the law first went into effect there was a total of 6,079 stalions reported for assessment purpose. The first twelve months the law was in effect, from July 4, 1906, to July 4, 1907, there were issued 3,642 certificates, thus indicating that fifty per cent of the stallions in use were pure bred. This is a much larger percentage of pure bred stallions in use than is reported in any other state. This is the natural result of the oft repeated statement that Iowa has more pure bred registered live stock than any other state.

PRINTING.

Two years ago we recommended in our annual report that steps be taken for such legislation as was necessary to authorize the printing of pamphlets or bulletins by this department, from time to time, containing such information as would be of interest or value. This recommendation we desire to renew and I trust your committee on resolutions will follow it up with a good strong resolution in support of same.

FARMERS' INSTITUTES AND AGRICULTURAL SHORT COURSES

In the year ending June 1, 1910, reports were filed from eighty counties holding Farmers' Institutes and state warrants were issued by the state auditor to the amount of $5,754.11, in payment of state aid provided by law. The eighty institutes held an average of seven sessions each, with an average attendance of 1,470, and a grand total attendance for the eighty institutes, of 117,550.

The Thirty-third General Assembly enacted the following law with reference to the payment of state aid to short courses in Agriculture and Domestic Science:

Section One—Short Course—State Aid. That section sixteen hundred and sixty-one-a (1661-a) and sixteen hundred seventy-five (1675) of the supplement to the code, 1907, be amended by adding thereto the following:

"Whenever one hundred (100) citizens of any county in the state that does not have a county or district fair, receiving the state aid as above provided, or that in any way may not hold a county fair, shall organize what is known as a 'short course' with a president, secretary, treasurer, and executive committee of not less than five members and shall hold a session of four or more days at some place within the county and give a program, designed to promote the science of agriculture and domestic science, said 'short course' organization upon filing with the auditor of state by its president, secretary and treasurer a statement showing what sums it has actually paid out in value for premiums during the period of the short course of that year, together with the certificate of the secretary of the state board of agriculture showing that it has reported according to law as provided in cases of county and district agricultural societies, shall be entitled to receive from the state treasurer a sum equal to forty per cent of the amount paid in premiums, but in no case shall the amount so received in any county exceed two hundred dollars ($200). The payment from the state treasury herein provided for shall be made by warrant of the state auditor as soon as due proof is made to him of the holding of said 'short course' as herein provided; and there is hereby appropriated out of any money, in the state treasury not otherwise appropriated, the sum necessary to pay the amount contemplated in this section.

Section Two—Appropriation for Farmers' Institute Payable to 'Short Course.'—When. All counties not holding a regular farmers' institute and where a short course is held, the money appropriated for such farmers' institute as provided in section 1675 of the supplement of the code, 1907, shall apply and be payable to said 'short course' upon proof of such organization and such 'short course' having been held, being filed with the state board of agriculture by the officers of said short course."

Under the provisions of this act two short courses were held and were paid the state aid usually paid to the Farmers' Institute. Three short courses drew both the institute and fair money, and one short course drew the fair money only. Seven short courses were held without any other assistance than what was given them by the Extension Department of the Agricultural College. There was held, or reported, thirteen short courses in Agriculture and Domestic Science, with a total attendance for the thirteen of 48,690, or an average attendance of 3,745 each. State auditor's warrants to the amount of $1,669.47 were issued to the six receiving state aid. The total attendance shown by the reports of the eighty institutes and thirteen short courses, was 166,240 and the total amount of state aid received was $7,423.58. No report of the holding of either an institute or short course was received from the following twelve counties:

Audubon, Benton, Cass, Clarke, Crawford, Des Moines, Fayette, Jasper, Jones, Plymouth, Webster, Winneshiek.

Davis county reported the holding of an institute, but the report was not received until after the time prescribed by law and, therefore, the state auditor could not issue his warrant for the state aid they were entitled to.

COUNTY AND DISTRICT FAIRS.

A grand success from every point of view, tells best the story of the county and district fairs held in Iowa during the past season. The annual inclement weather was encountered by many of the fairs, which, as it always does, interfered with both exhibits and attendance. However, on the whole the fairs had larger and better exhibits, paid out more money for premiums, had larger net receipts, a greater attendance, and fewer losses than ever before. The total number of fairs reporting this year was ninety-one—there being three in one county, two in each of eighteen counties, and one in fifty-two counties. Thus will it be seen that fairs were held in seventy-one of the ninety-nine counties in the state. It is noticeable that counties in which no fairs are held usually are grouped; for instance, no fairs were held in Union, Clarke, Lucas, Decatur, Wayne and Appanoose, nor in Emmet, Palo Alto, Clay, Cherokee, Osceola, Plymouth and Ida.

The total attendance reported for the ninety-one fairs was 800,000, making an average attendance for each fair of about 8,700. The total valuation of county and district fair ground property of the state is given at $818,000, making an average value of about $9,000.00. The total indebtedness reported was $134,000, being about 16 2-3 per cent of the actual valuation. The total receipts for the ninety-one fairs, for the past year, totals over $426,000.00, making an average for each fair of 20 per cent over the year 1909. The total amount paid out for premiums was $83,060.00, making an average of about $912.00 per fair, an increase over the amount paid out in 1909 of 20 per cent. Ninety-one is the largest number of fairs reported in the state for a number of years. With these facts and figures we do not see how it can be said, with any regard for the truth, that people are losing interest in the county and district fair; in fact we believe the county and district fair is more popular with the people today than ever before.

A very good article on the county and district fairs was published in the Farmers' Tribune a short time ago. It follows:

COUNTY AND DISTRICT FAIRS.

"The American county fair is an institution which has passed through varying stages of success and failure. Some have grown to enormous proportions while others have dwindled to failure and have been discontinued. Many factors have been influential in determining the success or failure of these institutions and not the least of these has been the attitude and ideals of the board of directors and the patronizing public.

"That many county fairs have been successful, and see yet before them new fields of opportunity, forcibly tells that there is a duty and a prominent place for the county fair properly managed and supported. It may be said here that the managing board in most cases labors long and incessantly to build up a creditable exhibit of a county, its ideals, resources, wealth, and prosperity. In far too many cases the support which they receive from citizens of the county is half hearted and lacks enthusiasm.

"What then are the objects of a county fair? Why does it exist? What should be its ideals? What should be the attitude of the public toward it? What good can it do the public? What good can it do the individual?

"The first object of a county fair is education. It furnishes a place for exploitation of public and individual achievement and public resources. It exists because of a public demand for such an institution. Its ideals should be to set high moral and industrial standards. Its attitude toward the public should be: To educate; to raise ideals and standards, to a higher level; to point out natural wealth; to emphasize opportunities for increased prosperity. It can do the public good just in proportion to the support which it receives from the public. The good which it can do the individual depends largely upon his support. The county fair cannot be benefited by, and is better off without, the presence or participation of the individual or set of individuals who have, in their own opinion, nothing to learn and only boisterous and ungentlemanly criticism to give. To the individual who attends or exhibits in a public spirited way, the county fair furnishes an opportunity to study the best results of production and skill and, thereby set new standards toward which he may work. It gives him new ideas for development of his special line of work; points out new fields of opportunity for profit and pleasure; furnishes a means of good, healthy and friendly competition. Lastly it should furnish much enthusiasm to future attainment.

"Many have watched the new exhibitor take defeat and have seen him come back next year and win the prizes of competition. This type of man is a living example of the great benefits derived from county fairs."

We submit, herewith, a list of fairs paying out over $1,000.00 for premiums the past year. They are twenty in number and are given in the order in which they rank:

Woodbury, Sioux City (Interstate Fair)	$8,933.30
Marshall County, Marshalltown	2,759.40
Cerro Gordo County, Mason City	2,266.10
Bremer County, Waverly	2,064.84
Union District, Muscatine County	1,875.00
Columbus Junction District, Louisa County	1,477.50
Henry County, Mt. Pleasant	1,414.30
Clinton District, Clinton County	1,356.16
Ringgold County, Tingley	1,327.00
Cedar County, Tipton	1,313.55
Kossuth County, Algona	1,248.25
Hardin County, Eldora	1,223.00
Clinton County, DeWitt	1,162.00
Monroe County, Albia	1,136.25
Cass County, Atlantic	1,131.69
Jasper County, Newton	1,108.25
Linn County, Central City	1,084.50
Audubon County, Audubon	1,039.05
Page County, Shenandoah	1,025.80
Davis County, Bloomfield	1,014.30

1910 FINANCIAL STATEMENT OF COUNTY AND DIS

Number	Location of Fair—County and City	Receipts			
		Balance on hand	Miscellaneous receipts	State appropriation	Total
1	Adair, Greenfield	------------	$ 1,638.91	$ 221.44	$ 1,860.35
2	Adams, Corning	$ 172.58	2,131.80	241.32	2,545.70
3	Allamakee, Waukon	383.80	2,110.30	152.10	2,646.20
4	Audubon, Audubon	491.62	3,773.50	253.90	4,519.02
5	Blackhawk, La Porte City	------------	1,675.62	202.37	1,877.99
6	Benton, Vinton	209.97	3,825.62	243.15	4,278.74
7	Boone, Boone	------------	1,348.40	222.35	1,570.75
8	Boone, Ogden	------------	1,617.95	210.02	1,827.97
9	Bremer, Waverly	58.25	11,086.40	300.00	11,444.65
10	Buchanan, Independence	194.63	3,250.13	209.20	3,653.96
11	Buena Vista, Alta	------------	5,991.32	247.56	6,238.88
12	Butler, Allison	------------	2,715.59	238.10	2,953.69
13	Calhoun, Manson	379.26	4,675.33	242.80	5,297.39
14	Calhoun, Rockwell City	------------	4,628.33	200.80	4,829.13
15	Carroll, Carroll	------------	3,222.03	222.80	3,444.83
16	Cass, Atlantic	843.98	6,023.22	263.16	7,130.36
17	Cass, Massena	682.78	2,845.54	200.20	3,728.52
18	Cedar, Tipton	396.27	5,862.40	281.55	6,540.22
19	Cerro Gordo, Mason City	------------	15,448.87	300.00	15,748.87
20	Chickasaw, New Hampton	37.84	1,387.75	158.90	1,584.49
21	Chickasaw, Nashua	152.61	3,927.52	238.87	4,319.00
22	Clayton, Strawberry Point	8.53	3,303.89	225.40	3,537.82
23	Clayton, Elkader	------------	2,626.30	223.11	2,849.41
24	Clayton, National	3.60	3,464.90	215.58	3,684.08
25	Clinton, DeWitt	397.12	7,253.77	266.20	7,917.09
26	Clinton, Clinton	178.63	4,724.65	285.61	5,188.89
27	Crawford, Arion	410.00	1,346.65	195.58	1,952.23
28	Davis, Bloomfield	244.75	4,078.07	251.43	4,574.25
29	Delaware, Manchester	251.50	2,064.36	220.90	2,536.76
30	Dickinson, Milford	66.00	1,387.50	152.80	1,606.30
31	Fayette, West Union	165.50	4,177.00	249.72	4,592.22
32	Fayette, Oelwein	.28	798.50	104.00	902.78
33	Franklin, Hampton	391.47	3,795.52	232.63	4,419.62
34	Grundy, Grundy Center	848.33	2,566.40	211.58	3,626.31
35	Guthrie, Guthrie Center	203.17	3,884.65	217.40	4,305.22
36	Hancock, Britt	------------	2,737.57	216.74	2,954.31
37	Hardin, Eldora	------------	5,606.97	272.30	5,879.27
38	Harrison, Missouri Valley	18.80	2,035.40	203.22	2,257.42
39	Henry, Mt. Pleasant	422.66	7,781.44	291.43	8,495.53
40	Henry, Winfield	91.35	1,804.06	230.00	2,125.41
41	Humboldt, Humboldt	------------	1,535.05	205.43	1,740.48
42	Iowa, Williamsburg	66.00	2,351.91	224.80	2,642.71
43	Iowa, Marengo	86.44	2,155.55	149.48	2,391.47
44	Jackson, Maquoketa	1.59	4,363.40	240.31	4,605.30
45	Jasper, Newton	------------	3,801.50	260.82	4,062.32
46	Johnson, Iowa City	------------	4,059.24	216.49	4,275.73
47	Jones, Monticello	893.63	5,126.90	158.30	6,178.83
48	Jones, Anamosa	------------	4,741.17	211.55	4,952.72
49	Keokuk, What Cheer	356.12	3,532.80	206.00	4,094.92
50	Kossuth, Algona	68.14	4,507.23	274.82	4,850.19
51	Lee, Donnellson	------------	1,743.25	166.84	1,910.09
52	Lee, West Point	------------	2,410.25	174.50	2,584.75
53	Linn, Marion	41.71	6,556.39	228.60	6,826.70
54	Linn, Central City	------------	2,680.67	258.45	2,939.12
55	Louisa, Columbus Junction	------------	5,178.95	297.75	5,476.70
56	Lyon, Rock Rapids	------------	10,129.59	233.70	10,363.29
57	Madison, Winterset	------------	1,742.05	225.02	1,967.07
58	Mahaska, New Sharon	100.44	3,011.90	222.45	3,334.79
59	Marion, Pella	56.82	3,495.95	202.89	3,755.66
60	Marshall, Marshalltown	1,073.84	10,249.98	300.00	11,623.82

TRICT FAIRS IN IOWA RECEIVING STATE AID 1910

Disbursements				Profit and Loss		Assets and Liabilities		
Miscellaneous expense	Speed premiums	Other premiums	Total	Balance Nov. 1 1910	Overdrafts	Value of property	Indebtedness	Number
$ 1,002.78	$ 293.50	$ 714.45	$ 2,010.73		$ 150.38	$ 8,400.00	$ 1,417.00	1
1,060.10	657.50	913.25	2,630.85		85.15	10,000.00		2
1,450.80	94.50	380.25	1,925.55	720.65		4,000.00		3
1,737.97	951.50	1,039.05	3,728.52	790.50		8,000.00	[illegible]	4
740.54	1,060.00	523.75	2,324.29		446.30	5,000.00	500.00	5
1,803.35	1,304.00	931.50	4,038.85	230.80		8,500.00	2,000.00	6
606.22	425.00	723.00	1,754.22		183.47	10,000.00	1,500.00	7
940.31	107.50	600.20	1,648.01	179.96		8,000.00	2,815.00	8
8,965.56	403.00	2,064.84	11,433.40	11.25		10,764.00		9
2,554.01	287.50	592.00	3,433.51	156.45		10,000.00	1,738.00	10
2,413.28	2,550.00	925.00	5,888.28	300.00		10,000.00	800.00	11
1,488.81	327.00	881.05	2,696.86	256.83		3,500.00	225.00	12
3,607.76	1,790.00	928.00	6,325.76		1,028.37	6,000.00	2,000.00	13
1,735.97	1,886.25	508.00	4,130.22	668.91		11,000.00	1,800.00	14
1,486.90	1,250.00	728.00	3,464.90		20.07	6,000.00	600.00	15
4,817.49	860.50	1,131.69	6,809.68	[illegible]		10,000.00	1,000.00	16
1,524.72	712.50	502.00	2,739.22	[illegible]		[illegible]		17
4,745.78	300.00	1,313.55	6,359.33	751.09		10,000.00	[illegible]	18
11,563.55	5,031.86	2,266.10	18,861.51		[illegible]	20,998.00	7,131.00	19
745.59	160.00	397.25	1,302.84	281.78		3,000.00	1,100.00	20
3,337.25		888.75	4,226.00	[illegible]		6,500.00	[illegible]	21
[illegible]	[illegible]	754.00	3,049.23	488.59		4,000.00	1,000.00	22
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	5,000.00	23
2,474.73	340.00	655.80	3,470.53	213.55		3,500.00	[illegible]	24
4,652.77	1,817.50	1,162.00	7,632.27	284.52		5,000.00	[illegible]	25
2,205.20	1,480.00	1,356.15	5,041.35	147.54		10,000.00	2,160.00	26
847.28	216.00	488.95	1,552.23	[illegible]		11,000.00	400.00	27
2,926.02	1,312.50	1,014.30	5,252.82		678.57	12,000.00	1,335.00	28
1,346.67	250.00	709.00	2,305.67	231.09		[illegible]	3,645.00	29
1,535.00	800.00	357.00	2,692.00		1,087.76	[illegible]	300.00	30
2,948.98	371.50	997.25	4,317.73	[illegible]		15,000.00		31
349.85	258.75	[illegible]	868.60	31.15		[illegible]	[illegible]	32
2,008.14	497.25	826.30	3,331.69	[illegible]		6,000.00	3,000.00	33
1,528.01	245.75	615.81	2,389.57	[illegible]		4,000.00		34
2,033.22	1,460.00	674.00	4,167.22	[illegible]		[illegible]	[illegible]	35
1,753.34	1,050.00	667.40	3,470.74		[illegible]	4,000.00	1,600.00	36
3,031.78	1,500.00	1,223.00	5,754.78	[illegible]		10,000.00		37
660.38	951.00	532.25	2,143.63	[illegible]		10,000.00	400.00	38
2,500.70	3,100.00	1,414.30	7,015.00	[illegible]		15,000.00		39
587.39	697.50	800.00	2,084.89	[illegible]		10,000.00	[illegible]	40
1,148.16	310.00	554.30	2,012.46		271.98	2,500.00	500.00	41
806.60	900.00	748.00	2,454.60	188.11		6,750.00	2,200.00	42
1,071.95	841.50	373.70	2,287.15	104.32		5,000.00	2,000.00	43
1,335.00	1,635.00	903.10	3,873.10	732.20		10,000.00	[illegible]	44
1,899.14	1,226.25	1,108.25	4,233.64		171.32	14,000.00	1,750.00	45
1,524.84	1,315.00	664.90	3,504.74	[illegible]		18,000.00	[illegible]	46
2,875.00	930.00	395.75	4,200.75	1,978.98		4,000.00		47
3,092.92	1,314.45	615.57	5,022.94		70.22	10,000.00	4,000.00	48
1,202.03	1,825.00	560.00	3,587.03	507.89		6,000.00		49
2,607.12	859.50	1,248.25	4,714.87	135.32		13,700.00	5,800.00	50
788.97	562.50	417.10	1,768.57	141.52		2,000.00		51
1,239.30	702.50	436.25	2,378.05	206.70		4,765.00	2,515.00	52
3,108.97	2,637.00	786.00	6,531.97	294.73		20,000.00	5,300.00	53
1,717.20		1,084.50	2,801.70	137.42		7,000.00	2,000.00	54
2,625.41	1,157.50	1,477.50	5,260.41	216.29		8,000.00	3,230.00	55
3,667.89	2,107.00	837.00	6,611.89	3,751.40		16,000.00		56
650.05	592.50	750.25	1,992.80		25.73	4,000.00	2,500.00	57
1,636.06	950.00	724.50	3,310.56	24.23		7,000.00	600.00	58
2,364.45	851.25	528.90	3,744.60	11.06		8,600.00	1,200.00	59
6,236.51	1,943.75	2,759.40	10,939.66	681.16		25,000.00		60

1910 FINANCIAL STATEMENT OF COUNTY AND DIS

Number	Location of Fair—County and City	Receipts			
		Balance on hand	Miscellaneous receipts	State appropriation	Total
61	Marshall, Rhodes	------------	1,079.25	223.70	1,302.95
62	Mitchell, Osage	800.00	1,721.81	208.18	2,729.99
63	Mills, Malvern	------------	4,469.42	214.41	4,683.83
64	Monona, Onawa	------------	1,801.70	235.50	2,037.20
65	Monroe, Albia	------------	5,059.47	263.62	5,323.09
66	Muscatine, Wilton Junction	------------	3,236.89	228.40	3,465.29
67	Muscatine, West Liberty	762.38	6,786.35	300.00	7,848.73
68	O'Brien, Sheldon	------------	4,643.97	227.65	4,871.62
69	O'Brien, Sutherland	164.01	2,955.90	218.15	3,338.06
70	Page, Shenandoah	------------	13,484.07	252.58	13,736.65
71	Page, Clarinda	------------	4,821.55	231.65	5,053.20
72	Pocahontas, Fonda	376.21	5,489.35	224.40	6,089.96
73	Pottawattamie, Avoca	921.84	3,346.48	247.80	4,516.12
74	Poweshiek, Malcom	119.02	2,713.40	199.30	3,031.72
75	Poweshiek, Grinnell	------------	4,016.37	246.94	4,263.31
76	Ringgold, Tingley	187.90	1,431.30	282.70	1,901.90
77	Ringgold, Mt. Ayr	------------	1,857.15	209.00	2,066.15
78	Sac, Sac City	356.78	6,134.26	214.85	6,705.89
79	Shelby, Harlan	------------	4,946.55	229.29	5,175.84
80	Sioux, Orange City	35.65	1,178.90	170.16	1,384.71
81	Tama, Toledo	------------	3,633.18	236.55	3,869.73
82	Taylor, Bedford	671.28	2,069.83	218.53	2,959.64
83	Van Buren, Milton	------------	1,545.50	147.64	1,693.14
84	Warren, Indianola	100.03	4,262.24	240.00	4,602.27
85	Wapello, Eldon	------------	4,405.65	225.09	4,630.74
86	Winnebago, Buffalo Center	169.41	1,163.30	151.62	1,484.33
87	Winneshiek, Decorah	89.96	2,402.15	206.53	2,698.64
88	Woodbury, Moville	71.26	1,759.85	203.00	2,034.11
89	Woodbury, Sioux City	7,687.90	38,770.64	300.00	46,758.54
90	Worth, Northwood	260.91	845.25	160.69	1,266.85
91	Wright, Clarion	------------	2,473.75	207.89	2,681.64
	Total 1910	$ 23,224.55	$ 382,503.34	$ 20,500.24	$ 426,228.13
	For comparison with 1909 statement, 88 fairs	$ 19,139.18	$ 309,285.94	$ 19,060.33	$ 347,485.45

TRICT FAIRS IN IOWA RECEIVING STATE AID 1910—Con.

Disbursements				Profit and Loss		Assets and Liabilities		
Miscellaneous expense	Speed premiums	Other premiums	Total	Balance Nov. 1 1910	Overdrafts	Value of property	Indebtedness	Number
545.23	------------	737.00	1,232.23	20.72	------------	2,500.00	351.00	61
1,055.69	199.13	581.85	1,836.67	893.32	------------	6,000.00	------------	62
6,623.71	2,992.50	644.15	4,900.89	------------	217.06	20,000.00	* 8,234.00	63
1,191.07	454.75	855.00	2,500.82	------------	463.62	12,000.00	3,000.00	64
1,821.00	2,100.00	1,136.25	5,057.25	265.84	------------	5,000.00	1,000.00	65
1,257.60	1,095.00	784.05	3,136.65	328.64	------------	3,000.00	------------	66
3,703.28	1,970.00	1,875.00	7,548.28	300.45	------------	5,000.00	1,500.00	67
1,602.58	1,940.00	776.50	4,319.08	552.54	------------	6,000.00	140.00	68
2,012.33	410.00	681.55	3,103.88	234.18	------------	5,000.00	1,100.00	69
9,625.56	2,579.50	1,025.80	13,230.86	505.79	------------	20,000.00	3,500.00	70
3,934.22	679.00	816.55	5,429.77	------------	376.57	10,000.00	500.00	71
2,409.06	2,525.00	744.00	5,678.06	411.90	------------	10,000.00	600.00	72
2,372.85	1,492.25	978.00	4,843.10	------------	326.98	10,000.00	------------	73
1,020.10	1,410.00	498.25	2,928.35	103.37	------------	6,000.00	------------	74
1,588.75	1,704.75	969.40	4,262.90	.41	------------	9,000.00	3,850.00	75
253.50	------------	1,327.00	1,580.50	321.40	------------	*a*	------------	76
650.00	800.00	590.00	2,040.00	26.15	------------	4,000.00	------------	77
2,231.98	1,792.50	648.50	4,672.98	2,032.91	------------	8,000.00	------------	78
1,827.00	2,225.00	792.90	4,844.90	330.94	------------	12,000.00	------------	79
670.13	405.00	425.40	1,500.53	------------	115.82	6,000.00	600.00	80
1,600.75	1,187.50	865.50	3,653.75	215.98	------------	5,000.00	------------	81
1,095.76	1,160.00	685.35	2,941.11	18.53	------------	6,000.00	------------	82
716.40	600.00	369.10	1,685.50	7.64	------------	4,000.00	1,650.00	83
2,201.95	1,350.00	900.00	4,451.95	150.32	------------	10,000.00	7,000.00	84
2,206.69	1,524.75	750.95	4,482.39	148.35	------------	6,000.00	3,200.00	85
515.96	260.00	379.05	1,155.01	329.32	------------	3,000.00	1,000.00	86
2,133.34	------------	565.30	4,256.80	------------	------------	5,000.00	------------	87
1,208.43	------------	530.00	1,738.43	295.68	------------	1,000.00	------------	88
28,087.65	4,978.65	8,933.30	41,999.70	4,758.84	------------	100,000.00	------------	89
611.22	84.50	401.74	1,097.46	169.39	------------	4,000.00	------------	90
984.75	732.00	578.95	2,295.70	385.94	------------	5,000.00	2,000.00	91
$ 224,553.12	$ 99,542.43	$ 83,060.55	$ 403,354.79	$ 34,163.62	$ 9,732.12	$ 818,277.00	$ 134,054.00	----
$ 182,238.47	$ 89,959.63	$ 65,788.26	$ 337,986.36	$ 21,521.03	$ 12,021.94	$ 669,392.00	$ 110,704.84	----

*Includes $5,000 expended this year for improvements.
a Grounds leased.

COUNTY AND DISTRICT FAIRS.

Attendance and Admission Fees Charged 1910.

Location of Fair—County and City	Total attendance	Admission Fees at Outside Gates			Admission fee to grand stand	Admission Fee to Quarter-Stretch	
		Adults	Children under 14 years	Vehicles		Persons	Vehicles
Adair, Greenfield	3,260	$ .25	$ .15	*	$ .15	$ .15	$ .25
Adams, Corning	8,721	.25	.15	.25	.15	.15	.15
Allamakee, Waukon	10,000	.35	.25	.25	.10	-------	-------
Audubon, Audubon	7,300	.25	.15	.25	.15	-------	-------
Blackhawk, La Porte City	2,734	.35	*c*	.25	.15	.10	-------
Benton, Vinton	7,304	.35	*	.25	.15	-------	-------
Boone, Boone	3,700	.35	.15	.25	.15	.15	-------
Boone, Ogden	4,000	.35	.15	-------	.10	.10	-------
Bremer, Waverly	15,000	.35	.25	.25	.15	-------	-------
Buchanan, Independence	6,000	.35	.15	.15	.15	.10	-------
Buena Vista, Alta	15,000	.35	.25	.25	.25	.25	-------
Butler, Allison	8,000	.35	*c*	.25	.15	-------	-------
Calhoun, Manson	5,000	.35	.15	.25	.25	.25	.25
Calhoun, Rockwell City	10,000	.35	*	.35	.25	.25	.25
Carroll, Carroll	5,671	.35	*	.25	.15	-------	-------
Cass, Atlantic	15,000	.35	.15	.35	.15	.25	.25
Cass, Massena	5,630	.25	.10	.25	.25	.15	.25
Cedar, Tipton	7,000	.35	.15	.35	.15	.15	.10
Cerro Gordo, Mason City	11,140	.35	.15	.25	.25	.25	*a*
Chickasaw, New Hampton	5,500	.25	.10	.25	.10	-------	-------
Chickasaw, Nashua	12,000	.35	*	.25	.15	-------	-------
Clayton, Strawberry Point	10,000	.35	.20	.35	.15	-------	-------
Clayton, Elkader	8,000	.35	.25	.25	.15	-------	-------
Clayton, National	7,000	.35	.25	.25	.15	-------	-------
Clinton, DeWitt	17,000	.35	.15	.25	.25	.25	.25
Clinton, Clinton	11,370	.35	.15	.35	.25	-------	-------
Crawford, Arion	5,500	.25	.15	.25	.25	-------	.25
Davis, Bloomfield	22,000	.25	.15	.10	.10	.10	-------
Delaware, Manchester	5,000	.35	.15	.25	.15	-------	-------
Dickinson, Milford	3,500	.25	.15	.25	.15	-------	-------
Fayette, West Union	20,000	.25	*	.25	.15	-------	-------
Fayette, Oelwein	2,800	.25	.15	.25	.15	-------	-------
Franklin, Hampton	9,500	.35	.25	.25	.25	-------	-------
Grundy, Grundy Center	8,000	.35	.15	.25	.15	-------	-------
Guthrie, Guthrie Center	12,000	.35	.25	.35	.25	-------	-------
Hancock, Britt	5,843	.35	.25	.35	.15	.15	-------
Hardin, Eldora	20,000	.25	.15	.25	.15	-------	-------
Harrison, Missouri Valley	5,000	.35	*	.35	.15	.25	-------
Henry, Mt. Pleasant	24,000	.25	*d*	.25	.15	.10	.25
Henry, Winfield	5,000	.25	.15	.25	.15	.15	.10
Humboldt, Humboldt	2,608	.35	.25	.25	.15	-------	-------
Iowa, Williamsburg	3,420	.25	.15	.25	.25	.25	.25
Iowa, Marengo	5,000	.25	.15	.25	.15	.25	.25
Jackson, Maquoketa	9,000	.35	.15	.35	.15	.25	-------
Jasper, Newton	5,693	.35	*d*	.35	.25	.25	.25
Johnson, Iowa City	8,000	.35	.25	.35	.15	.15	.15
Jones, Monticello	8,569	.35	.15	.15	.15	.15	-------
Jones, Anamosa	10,000	.35	.15	.25	.15	.15	-------
Keokuk, What Cheer	10,000	.25	*c*	.25	.25	.25	.25
Kossuth, Algona	9,000	.35	*d*	.25	.25	.15	-------
Lee, Donnellson	5,000	.25	.15	.15	-------	-------	-------
Lee, West Point	3,576	.35	*c*	.25	.15	.10	-------
Linn, Marion	10,000	.35	.15	.25	.15	-------	-------
Linn, Central City	9,000	.25	.15	.25	.15	-------	-------
Louisa, Columbus Junction	15,000	.25	.10	.25	.10	.15	.10
Lyon, Rock Rapids	13,056	.35	.25	.25	.15	.15	-------
Madison, Winterset	4,000	.35	*	-------	.25	.25	.25
Mahaska, New Sharon	5,000	.25	.15	.25	.25	.25	.25
Marion, Pella	7,630	.25	.15	.25	.25	.15	.15

COUNTY AND DISTRICT FAIRS—Continued

Location of Fair—County and City	Total attendance	Admission Fees at Outside Gates			Admission fee to grand stand	Admission Fee to Quarter-Stretch	
		Adults	Children under 14 years	Vehicles		Persons	Vehicles
Marshall, Marshalltown	28,000	.25	.15	.25	.15	.15	.25
Marshall, Rhodes	5,000	.25	.15	.25			
Mitchell, Osage	5,242	.25	.15	.25	.15		
Mills, Malvern	12,000	.25	*d*	.25	.25	.25	.25
Monona, Onawa	3,000	.35	*	.25	.25		.25
Monroe, Albia	11,500	.25	.15	.25	.15	.10	.25
Muscatine, Wilton Junction	5,670	.35	*	.35	.15	.15	
Muscatine, West Liberty	15,000	.25	*c*	.25	.20	.20	.20
O'Brien, Sheldon	6,500	.35	.25	.25	.25		
O'Brien, Sutherland	6,500	.35	.25	.35	.15	.15	
Page, Shenandoah	25,000	.25	.15	.25	.15	.25	
Page, Clarinda	10,000	.25	.15	.25	.15	.25	.25
Pocahontas, Fonda	9,254	.35	.25	.25	.25	.25	.25
Pottawattamie, Avoca	5,000	.35	.25	.25	.25	.15	.15
Poweshiek, Malcom	6,500	.25	.15	.25	.25	.25	
Poweshiek, Grinnell	9,000	.35	*	.25	.25	.25	
Ringgold, Tingley	3,500	.25	.15	.15	.15	.15	.15
Ringgold, Mt. Ayr	3,300	.25	.15	.25	.15	.25	.25
Sac, Sac City	11,500	.35	.25	.25	.25	.25	.25
Shelby, Harlan	10,123	.35	.25	.25	.25		
Sioux, Orange City	3,000	.35	.20	.25	.25		
Tama, Toledo	11,000	.25	.15	.25	.15	.25	.25
Taylor, Bedford	3,100	.25	.10	.25	.10	.25	
Van Buren, Milton	6,000	.25	*	.25	.10	.10	.10
Warren, Indianola	9,000	.25	.15	.25	.25	.25	
Wapello, Eldon	11,235	.25	.15	.25	.15	.25	
Winnebago, Buffalo Center	3,500	.35	.20	.35	.10		
Winneshiek, Decorah	9,040	.35	.15	.15	.15		
Woodbury, Moville	3,000	.35	.15				
Woodbury, Sioux City	40,018	.50	.25	.25	*b* .25	.25	.25
Worth, Northwood	2,500	.25	.25	.25	.15		
Wright, Clarion	5,000	.50	*	.25	.25		

* Free.
a None admitted.
b Reserved seats 50c.
c Under 10 years free.
d Under 12 years free.

THE IOWA STATE FAIR AND EXPOSITION

It gives me much pleasure to again report a successful show—such being the unanimous verdict for the Iowa State Fair and Exposition for 1910. It was the best and most useful fair ever held, notwithstanding the inclement weather on six of the seven days the fair was open to the public, which caused a marked decrease in the attendance. The report of the ticket auditing department shows that 231,233 people passed through the gates, being 20,000, or 10 per cent more than ever before, and an increase of nearly 60,000, or 33 1-3 per cent gain in three years.

The net receipts for the 1910 fair were $157,259.77, an increase of $19,952.37, or 14½ per cent over 1909, and 52,000 or over 50 per cent larger than three years ago. A very conservative estimate would place the loss of receipts on account of rain at $15,000.00. Attached to and made a part of this report will be given a full and detailed statement of all receipts and disbursements of the department for the year.

Fourteen hundred and seventy-three exhibitors made 14,004 entries at the 1910 fair. By far the largest number of exhibitors were registered in the live stock and machinery sections—367 in the four stock departments and 320 in the machinery department. There were 141 exhibitors of agricultural products; 118 in the pantry department; 106 in the educational department; and 216 in the fine arts department. Never before was there such a show of horses as at the Iowa State Fair this year. One hundred and one exhibitors entered over 1,100 horses, valued at over $1,000,000.00. All breeds were represented, from the smallest pony to the ton draft horse. Of course the entries in the draft horse breeds were larger than those in the light harness and coach breeds, for Iowa is a draft horse state. It has been many years since such a magnificent show of Shetland ponies has been made; it was truly a wonderland for the little folks.

The show of beef cattle was somewhat larger than in the preceding year and much improved in quality. The management was fortunate in being able to secure, as a judge of Short Horn cattle, the services of J. Deane Willis of England, who is one of the best known living Short Horn breeders. His decisions were eagerly watched for and his work followed by many hundreds of cattle breeders. The exhibit of dairy cattle was not so large in numbers as in 1909 but the loss in numbers was partially made up for by having on exhibition the champion three year old dairy cow of the world, "Dairy Maid of Pinehurst," a Guernsey heifer owned by W. W. Marsh of Waterloo, Iowa.

The show of hogs, as had been expected, was somewhat smaller than for the previous year; this owing to the shortage of hogs in the hands of the breeder. It has been many years since the available hog supply has been so low as in the past twelve months. There were in the pens about 2,000 hogs. The National Show of the Berkshire Congress was held in connection with the Iowa Berkshire Show and this stimulated quite and interest in the show of that breed of hogs.

The sheep show was stronger than ever, and owing to the shortage of hogs the management had the opportunity of utilizing the pens in the east section of the hog barn for sheep, which was much more satisfactory to the exhibitors than the old pens they had been using in former years.

Ninety-nine poultry exhibitors showed 1,620 birds, which is the largest show of poultry made at the Iowa State Fair for a number of years. Before there can be much increase in the poultry show it will be necessary to increase the cooping capacity. The poultry division of the Iowa State College at Ames, made a wonderfully interesting and educating exhibit in the poultry building. It was one of the valuable features of the fair and was highly appreciated by those interested in poutlry raising.

One of the features of the agricultural exhibit was the substitution of the individual farm exhibit class for the old county exhibit, which was too much of a commercial exhibit to be of any benefit. It was thought that individual exhibits from various farms from over the state would be of vastly more importance, as an educational factor in demonstrating the productiveness of the rich Iowa soils, and the possibilities to individuals, by practicing a more systematic and intensive method of farming. All exhibits were to be the products of individual farms. Awards were based on the following score of points:

Quality of Products		50
Variety—		
Field	30	
Garden	5	
Orchard	5	40
Arrangement		10
Total		100

By this scoring process it will be noticed that the greatest stress is placed upon the 'Quality of Products' and second that in the 'Varieties' the greatest importance is given to the field products in about the same relative proportion that field products represent the total products of the farm. No effort was made to secure a large number of exhibits for the first year, it being an innovation and we thought best, to give it a thorough try out before seeking to procure any great number of exhibitors. However, in my judgment, this is one of the best and most useful classes in our prize list, and one that will rapidly grow in the number of exhibits each succeeding year. There were 23 exhibitors in the different divisions the past year, with no effort on our part to secure them. It seemed to meet with the approval of the farmer, the educator, and the newspaper man.

Farm implements, farm machinery, farm tools, vehicles of every description—acres of them—is about the only comment necessary in describing the exhibit in the machinery and implement department at the 1910 fair. This is one of the most interesting departments of the fair and with a proper and suitable building in which to show, at least a part of this magnificent exhibit, it will be more appreciated than ever.

There were many other interesting exhibit features of the fair introduced for the first time this year, among others was one made by the fish and game department of the state. The interest in the Boys' Judging Contest still keeps up, more boys taking part in this year's contest than ever before. There were 42 boys entered. Mr. Harley Walker of Ames stood highest in the number of points scored and was awarded first scholarship. I was very much pleased a few days ago to learn that the Boys' Judging Team from the Nebraska Agricultural College, which stood second in the judging contest at the International Live Stock Show, was coached by Professor Ellis Rail, one of the first boys to win a scholarship at the Iowa State Fair.

The number of exhibits and entries follow:

	No. of Exhibitors 1910	No. of Entries 1910	No. of Exhibitors 1909	No. of Entries 1909
Horses	101	1,958	96	1,589
Cattle	72	1,203	82	1,210
Swine	161	1,973	187	2,139
Sheep	33	751	30	652
Poultry	99	1,297a	79	1,119b
Agricultural Products	141	939	131	1,077
Farm Implements	320	....	320	....
Pantry and apiary	118	1,640	112	1,235
Dairy	74	74	125	125
Horticulture	19	357	27	1,157
Floriculture	13	245	13	217
Fine arts	216	2,917	218	3,277
Educational	106	650	48	531
	1,473	14,004	1,448	14,328

a—1,621 birds.

b—1,539 birds.

A word here with reference to the spirit of fault finding, which occasionally appears at the close of the annual exhibition, may not be out of place. In referring to this matter at this time we desire to make a distinction between fault finding and criticism. Fault finding is usually intended to be injurious, while criticism is intended to bring about the opposite effect. The fault finder is a pessimist, and usually seeks to discover other's faults and can see no good in anything or anybody, while a critic is an optimst and passes judgment with the view of bringing about an improvement in the condition of affairs. The management of the Iowa State Fair and Exposition welcomes criticism but deplores the spirit of fault finding. They are not unmindful of the fact that the Iowa State Fair and Exposition is a public institution, belonging wholly to the state and that they, as managers, are merely serving the people who have en-trusted to them the managegment of their annual exposition. It is entirely proper that the management of the fair and institution be closely watched and criticised by the public. Such criticism, given in the proper spirit, is wholesome and is conducive of better things.

It is by this public criticism that the needs of the institution are most forcibly brought to the attention of the people of the state, as well as the management. While it is not always possible for the management to put into effect, or adopt, the suggestions brought out in a criticism it will, in many instances, point out a weakness in the condition of affairs that has been entirely overlooked. The Board of Management realizes better than any one else, that the fair and exposition has grown much more rapidly than proper facilities for the care of people and exhibits have been added. There are many improvements which ought to be made that will have to wait until such time as funds are available to pay the cost of same. The sanitary condition of the grounds during the time of the holding of the annual exposition cannot be greatly improved until such time as a sewer system can be built. This time will not come until sufficient funds are had to pay the cost of same, and until such further time as the city will construct a large sewer in that part of the city in order that a proper outlet may be had for a fair grounds sewer.

A universal complaint that is heard most often is with reference to the food served by the lunch stands and restaurants on the grounds. This not only applies to the Iowa State Fair but to all other large fairs, or gatherings, where provisions must be made for temporary restaurants and lunch stands. It is a problem which confronts the managers of all the fairs, and so far as we know no one has yet offered any suggetion that would solve the problem. We believe we can safely say, without fear of contradiction, that conditions in this respect have been greatly improved in the past few years. Permanent buildings for lunch stands and restaurants will, in my opinion, solve, to a great extent, this very perplexing problem. These can only be had as fast as funds are available for their building. We hope, therefore, that in the future there will be more criticism and less fault finding at the close of the annual fair.

PERMANENT PLAN OF THE STATE FAIR AND EXPOSITION GROUNDS.

A very important step was taken, early the past year, by the board when they employed a landscape architect to make a permanent plan for the future development of the State Fair and Exposition grounds. Mr. O. C. Simonds of Chicago was selected for this work and has just recently finished the plans. Prior to taking up the work the landscape architect was furnished with an outline, showing the various buildings and spaces necessary to a fully equipped exposition grounds, in addition to the permanent improvements already made, with approximate areas for each. These plans were deemed of great importance at this time by the board in order that all future improvements might be made to harmonize with some well defined plan. Perhaps the most prominent features of these plans are the model farm buildings and lots, dairy barn, sheep sheds, hog sheds, open air auditorium for public meetings and gatherings of every kind, pioneer headquarters building, space for demonstrating the working of various kinds of farm implements and machinery, etc. We will not take the time here to tell of the various other buildings and improvements contemplated, for a complete outline of them all will be included in the printed proceedings of the board, which will be published in the 1910 Iowa Year Book of Agriculture.

NEEDED ADDITIONAL IMPROVEMENTS.

While great advancement has been made within the past few years, it will be several years yet before the necessary equipment and improvements are completed as they should be upon the Iowa State Fair and Exposition grounds. Nor will the usefulness of the exposition be entirely apparent until the grounds are complete in every detail.

The board will present to the thirty-fourth general assembly recommendations for such improvements as seem most needed at this time. Their recommendations will, in all probability, point out the necessity for the state to acquire additional land; the building of an implement and machinery shed; additional sections to the horse and cattle barns; sheep barn, etc. These do not meet all the requirements but will help, and be another step toward a permanently equipped exposition grounds.

IMPROVEMENT ACCOUNT 1910 AT THE IOWA STATE FAIR AND EXPOSITION GROUNDS.

During the year warrants to the amount of $24,360.98 were issued in payment of permanent improvements and repairs. $6,429.27 of this amount was in payment on contracts for the previous year. There is still an unpaid balance of $2,157.47—$1,157.47 on the amphitheater contract and $1,000.00 on the landscape plans of the grounds. The largest item of expense for improvement was for the walks, floors, iron fencing, wire guard railing, etc., additional to, and surrounding the amphitheater. Quite a little street improvement work was done; the most important item being for the labor and cost of oil used in oiling the streets prior to the fair. While we ostensibly placed the oil on the streets to keep down the dust, it was equally as useful in keeping the streets free of mud when the long drought was broken at the beginning of the fair and we were treated to a regular old fashioned daily rain. Something over 12,000 gallons of oil was used, covering about 12,000 square yards of surface at a cost of about $450.00 to $500.00. Just how lasting and permanent it will be we are unable to say. We are told that after applying the oil for two or three years in succession it will be unnecessary to use it again for a number of years, but time only will tell. It is, to say the least, worth the cost when used on the streets at the state fair grounds.

Including the amount paid out for improvements this year there has been expended within the last nine years over $280,000.00 out of state fair receipts for improvements, or an average of over $31,000 each year. In addition to this there has been paid out for cash prizes over $130,000 more than would have been paid had the prizes not been extended. During the same period the legislature has appropriated but $259,000 for additional improvements at the fair grounds; this amount being for four buildings, viz., stock pavilion, agricultural building, hog barn, and amphitheater. The people of the state can be proud of the fact that at least one of her many institutions contributed toward its own upbuilding.

Following is a statement showing amounts expended for improvements within the past nine years; also a table showing amount of cash prizes paid during the same period.

Year	Amt. of Imp. from fair receipts	Amt of Improvements by appropriation	Total Amt. Imp. in 9 years	Amt. paid out for cash prizes
1902	$ 26,400.00	$ 37,000 Stock Pavilion	$ 63,400.00	$ 21,736.31
1903	18,000.00		18,000.00	23,813.13
1904	12,600.00	47,000 Agr'l Bldg.	59,600.00	24,691.68
1905	12,000.00		12,000.00	28,556.89
1906	30,000.00		30,000.00	31,703.94
1907	41,400.00	75,000 Swine Barn	116,400.00	35,504.79
1908	58,300.00		58,300.00	38,744.56
1909	57,650.00	100,000 Amphitheatre.	157,650.00	42,262.76
1910	24,360.00		24,360.00	49,717.50
	$280,710.00	$259,000	$539,710.00	$296,731.56

FINANCES.

The total receipts from all sources for the department for the year closing November 30, 1910, was $171,918.07, of which $157,259.77 was receipts of the 1910 fair and $14,658.30 receipts from other sources. Of this last amount $10,000.00 was from loans made early in the season that timely payments might be made on all contracts. This item also appears in the expense account other than for the fair. $1,271.50 was received in fees through the division of horse breeding and $2,121.53 for rentals for use of the fair grounds and other collections made by the superintendent of grounds. $1,000.00 was received from the state to apply on the payment of premiums for insurance on fair ground buildings. Added to the receipts of the year was the cash balance, December 1, 1910, of $4,985.25, bringing the total credits for the twelve months ending November 30, 1910, to $176,903.32.

The total amount of warrants issued during the same period was $169,332.42, of which there was still unpaid, November 30, 1910, $167.15, thus making the amount of warrants issued from December 1, 1909, to November 30, 1910, paid by the treasurer, $169,165.27. To this is to be added the warrants paid and issued prior to December 1, 1909, $255.96, making the total amount of warrants paid by the treasurer, for the twelve months ending November 30, 1910, $169,421.23. Of the total amount of warrants issued during the year $14,740.26 was for expense other than the fair, of which $10,279.83 was for bills payable; $2,152.37 for insurance; $325.00 for adding machine; $1,465.86 for maintenance of fair grounds, and $334,79 in bills carried over from 1909. The expense other than for fair or improvements exceeded the receipts from the same source by $81.96. As we have previously stated, the total expense of the fair of every kind was $130,231.18 and improvments $24,360.98. The total receipts, including the cash balance on hand December 1, 1909, exceeded the total disbursements by $7,482.09, the amount of cash in the hands of the treasurer November 30, 1910. There is still outstanding unpaid warrants to the amount of $198.65, leaving a net credit above warrants issued previous to December 1, 1910, of $7,283.44 From this there should be a further deduction of $2,157.47, the amount still unpaid on contracts for the amphitheatre and landscape work. This would leave a net credit for the department, on December 1, 1910, of $5,125.97.

There was paid out for premiums, account of the 1910 fair, $49,717.50. For amusements and attractions $25,520.25. For advertising $9,985.19. For forage $5,404.54; for printing and postage $2,712.63; for expense of board and committee meetings and salaries $6,456.82; for educational exhibits $1,983.52; for police and guards $3,655.46; for ticket takers, ushers, etc., $2,253.39. For ticket sellers and treasurer's department $1,682.95; for light and power, $1,641.65, and for all other purposes, fully set out in the statement to follow $19,217.28. The net profit for the fair of 1910 was $27,028.69.

The next largest item of expense, after premiums, will be seen to be the $25,520.25 paid for music and amusements. I ask your indulgence for a moment while I give you the receipts, directly chargeable to the same account, that you may better know that the amusement feature is not crippling the fair from a financial standpoint. We will first add to the $25,520.25—$10,755.00, the amount paid out for racing, which will bring this total up to $36,375.00. The first credit we will list will be the receipts from the amphitheater and night stock pavilion show, amounting to $27,736.25. To this add $5,857.50, entry fees from races; $1,000.00 for score card and amphitheater concession; $2,067. 75 for the sale of tickets after five o'clock p. m., and you already have $36,561.60, an amount greater by several hundred dollars than the total cost of amusement, music and races. To this, however, you can reasonably add at least a small percentage of the gate receipts, say five per cent, and you have a credit of $40,308.00 to the account, or a profit of over $4,000.00 on account of the racing and amusement program. You will notice we only credited five per cent of the gate receipts on account of persons passing through the gates for the sole purpose of witnessing the various amusement programs, or listening to the various band concerts. This would leave 95 per cent of the attendance who came for other purposes, viz.: To see and study the numerous exhibits. If you are not willing to concede the last statement you must add a greater percentage of the gate receipts to the credit of the amusement program, which will, to say the least, leave it absolutely impregnable from assault from any quarter.

PREMIUM WARRANTS.

8-27	8003	M. A. Murdaugh	$ 265.00
8-27	8004	G. F. Fountain	20.00
8-27	8005	Tim Cronin	20.00
8-27	8006	Rome Glover	50.00
8-29	8007	R. C. Ralph	20.00
8-29	8008	R. C. Ralph	18.75
8-29	8009	Simon Warner	110.00
8-30	8010	Ollie Hanks	86.25
8-30	8011	G. W. Spicer	40.00
8-30	8012	G. W. Spicer	18.75
8-30	8013	James Henry	80.00
8-30	8014	J. J. Strickler	30.00
8-30	8015	T. Cheek	40.00
8-30	8016	Rowe Glover	20.00
8-31	8017	A. Pogue	100.00
8-31	8018	Bradford Compton	225.00
8-31	8019	C. J. Bray	210.00
8-31	8020	C. Brown	100.00
8-31	8021	A. E. Noe	200.00
8-31	8022	C. E. Bliss	450.00
8-31	8023	H. J. McKenna	270.00
8-31	8024	J. R. Hand	220.00
8-31	8025	J. R. Hand	125.00
8-31	8026	C. D. Dillenbeck	50.00
9- 1	8027	Rome Glover	110.00
9- 1	8028	C. E. Agler	50.00
9- 1	8029	H. H. Smith	144.00
9- 1	8030	C. P. Johnson	432.00
9- 1	8031	Chas. Hardie	139.00
9- 1	8032	T. J. Jones	120.00
9- 1	8033	Ambrose Johnson	35.00
9- 1	8034	C. D. McLean	70.00
9- 1	8035	Ira Hall	200.00
9- 1	8036	O. V. Battles	100.00
9- 1	8037	C. P. Johnson	30.00
9- 1	8038	I. R. Thompson	25.00
9- 1	8039	J. W. Montgomery	660.00
9- 1	8040	M. D. Shutt	752.00
9- 1	8041	H. Woods	315.00
9- 1	8042	Ralph Pauly	20.00
9- 1	8043	F. C. Caine	775.00
9- 1	8044	A. R. Baldwin	140.00
9- 1	8045	Ollie Hanks	80.00
9- 2	8046	T. O. Swain	50.00
9- 2	8047	J. E. Casey	35.00
9- 2	8048	P. E. Strand	200.00

9- 2	8049	R. C. Ralph	20.00
9- 2	8050	D. Alleman	200.00
9- 2	8051	G. W. Parnell	122.00
9- 2	8052	Lewis Bros.	122.00
9- 2	8053	E. G. Roberts	100.00
9- 2	8054	Uriah Cook & Sons	120.00
9- 2	8055	A. Bates	51.00
9- 2	8056	Balmat & Son	44.00
9- 2	8057	Wellington & Spring	98.00
9- 2	8058	C. C. Roup	106.00
9- 2	8059	H. H. Powell & Son	10.00
9- 2	8060	W. A. Taylor & Son	31.00
9- 2	8061	Elmer Henderson	14.00
9- 2	8062	S. P. Chiles	58.00
9- 2	8063	O. Whiteman	13.00
9- 2	8064	S. P. Freed	50.00
9- 2	8065	J. E. Meharry	249.00
9- 2	8066	Fuller Bros.	2.00
9- 2	8067	W. M. Wingate	3.00
9- 2	8068	C. A. Evans	49.00
9- 2	8069	The Farmer Farm	300.00
9- 2	8070	Hanks & Bishop	44.00
9- 2	8071	Baxter & Comer	125.00
9- 2	8072	E. A. Thomas	19.00
9- 2	8073	Mrs. Minnie Lewis	39.60
9- 2	8074	Nash Bros	61.00
9- 2	8075	Joe Kramer	6.00
9- 2	8076	Geo. Lippert	29.00
9- 2	8077	Willie Essig	94.00
9- 2	8078	Geo. L. Miller	6.00
9- 2	8079	W. H. Miner	58.00
9- 2	8080	Alden Anderson	19.00
9- 2	8081	J. W. Justice & Sons	147.00
9- 2	8082	W. T. Barr	4.00
9- 2	8083	Geo. A. Lasley	8.00
9- 2	8084	Ira Hall	100.00
9- 2	8085	G. M. Younglove	70.00
9- 2	8086	O. H. Peasley & Son	71.00
9- 2	8087	C. C. Croxen	34.00
9- 2	8088	F. T. Lawton	28.00
9- 2	8089	G. L. Emmert & Son	25.00
9- 2	8090	C. M. Perrin	26.00
9- 2	8091	E. L. Nagle & Son	114.00
9- 2	8092	D. H. Lewis	315.00
9- 2	8093	Wheeler Homestead	88.00
9- 2	8094	Mike Sharp	138.00
9- 2	8095	Clayton Mesenger	18.00
9- 2	8096	T. H. Jones	110.00

9- 2	8097	Simon Warner	110.00
9- 2	8098	W. J. Brinnigar	46.00
9- 2	8099	E. M. Castle & Son	2.00
9- 2	8100	J. W. Garvey	8.00
9- 2	8101	Chandler Bros.	261.00
9- 2	8102	B. F. Davidson	156.00
9- 2	8103	Cooper & Nephews Co.	250.00
9- 2	8104	B. F. Kunkle	38.00
9- 2	8105	R. L. Parker	750.00
9- 2	8106	A. P. Alsin	6.00
9- 2	8107	Morrell & Co.	37.00
9- 2	8108	W. A. Hoover	38.00
9- 2	8109	S. G. McFadden	4.00
9- 2	8110	H. S. Allen	8.00
9- 2	8111	Alex W. Arnold	152.00
9- 2	8112	A. J. Blakeley	36.00
9- 2	8113	Waltemier Bros.	144.00
9- 2	8114	H. G. McMillan & Sons	345.00
9- 2	8115	F. H. Herring	8.00
9- 2	8116	Robt. Taylor	155.00
9- 2	8117	F. W. Akers	9.00
9- 2	8118	Paul & Leahy	6.00
9- 2	8119	D. H. Paul	27.00
9- 2	8120	H. E. Woods	18.00
9- 2	8121	Makin Bros	170.00
9- 2	8122	Cyrus A. Tow	233.00
9- 2	8123	E. A. Hess	33.00
9- 2	8124	J. E. Painter	178.00
9- 2	8125	Peak & Saunders	160.00
9- 2	8126	C. A. Saunders	205.00
9- 2	8127	A. L. Foster	65.00
9- 2	8128	W. W. Marsh	280.00
9- 2	8129	E. B. Thomas	15.00
9- 2	8130	Frank White & Son	343.00
9- 2	8131	C. T. Graves	60.00
9- 2	8132	G. H. Burge	23.00
9- 2	8133	Adam Sietz	345.00
9- 2	8134	Thos. Y. Kane	278.00
9- 2	8135	Frank Davis & Son	362.00
9- 2	8136	Carpenter & Ross	295.00
9- 2	8137	W. W. Brown	148.00
9- 2	8138	H. E. Browning	9.00
9- 2	8139	J. A. Loughridge	55.00
9- 2	8140	O. E. Briney	60.00
9- 2	8141	Wm. Crownover	105.00
9- 2	8142	Weston & Son	55.00
9- 2	8143	A. G. Soderberg	190.00
9- 2	8144	H. A. Sexsmith	4.00

9- 2	8145	J. S. Fawcett & Son	78.00
9- 2	8146	W. A. Graham	45.00
9- 2	8147	Thos. Bass	550.00
9- 2	8148	E. L. Bitterman	29.00
9- 2	8149	E. J. Brouhard	51.00
9- 2	8150	S. B. Mills	85.00
9- 2	8151	G. H. White	196.00
9- 2	8152	F. W. Harding	308.00
9- 2	8153	W. H. Dunwoody	98.00
9- 2	8154	Finch Bros.	70.00
9- 2	8155	J. G. Biller & Son	10.00
9- 2	8156	Maasdam & Wheeler	135.00
9- 2	8157	W. J. Miller	370.00
9- 2	8158	Theo. Martin	13.00
9- 2	8159	W. S. Hill	311.00
9- 2	8160	R. J. Harding	8.00
9- 2	8161	W. M. Sells & Sons	11.00
9- 2	8162	J. O. Bryant	137.00
9- 2	8163	J. M. Gross	55.00
9- 2	8164	J. E. Hammer	17.00
9- 2	8165	M. J. Nelson	30.00
9- 2	8166	E. F. Besser	25.00
9- 2	8167	S. W. Stewart & Sons	20.00
9- 2	8168	O. S. Gibbons & Sons	148.00
9- 2	8169	Jno. S. Albaugh	140.00
9- 2	8170	C. E. Bunn	531.00
9- 2	8171	Wm. F. Renk	89.65
9- 2	8172	Wm. F. Renk	14.35
9- 2	8173	Gawley & Southall	8.00
9- 2	8174	J. A. Sage	140.00
9- 2	8175	Metz & Sons	10.00
9- 2	8176	R. F. Smith	25.00
9- 2	8177	C. E. Jones	35.00
9- 2	8178	Geo. A. Heyl	201.00
9- 2	8179	A. W. & F. E. Fox	244.00
9- 2	8180	O. J. Mooers	482.00
9- 2	8181	Wm. Barrens	20.00
9- 2	8182	T. K. Tomson & Son	106.00
9- 2	8183	S. L. Brock	265.00
9- 2	8184	Walker Bros.	172.00
9- 2	8185	C. S. Hechtner	250.00
9- 2	8186	W. H. Miller & Son	292.00
9- 2	8187	V. R. Crane	582.90
9- 2	8188	V. R. Crane	52.10
9- 2	8189	Forbes Bros.	101.10
9- 2	8190	Forbes Bros.	210.90
9- 2	8191	Roebuck Farms	860.00
9- 2	8192	H. S. & W. B. Duncan	8.00

9- 2	8193	Peter Hopley & Sons	140.00
9- 2	8194	J. J. Williams & Sons	109.00
9- 2	8195	Jacob Marti	110.00
9- 2	8196	Crawford & Griffin	60.00
9- 2	8197	Peter Birgen	20.00
9- 2	8198	E. N. Gates	65.00
9- 2	8199	C. F. Dewey	65.00
9- 2	8200	Henry Lefebure	135.00
9- 2	8201	J. V. Arney	42.00
9- 2	8202	J. L. Horsewell	20.00
9- 2	8203	Dixon & Bruins	342.00
9- 2	8204	T. J. Lee	230.00
9- 2	8205	Roy Owen	160.00
9- 2	8206	C. E. Monahan	135.00
9- 2	8207	R. M. Anderson & Sons	130.00
9- 2	8208	E. L. Leavens	39.00
9- 2	8209	Smith & Roberts	338.00
9- 2	8210	D. Tietjen	204.00
9- 2	8211	Geo. Bacon	5.00
9- 2	8212	Warren T. McDonald	15.00
9- 2	8213	A. S. Burr	125.00
9- 2	8214	J. E. Bales & Son	123.00
9- 2	8215	Straub Bros.	314.00
9- 2	8216	McAdoo & Brown	7.00
9- 2	8217	M. D. Korns	122.00
9- 2	8218	Horace L. Anderson	90.00
9- 2	8219	Jos. C. Brunk	120.00
9- 2	8220	W. A. Wickersham	20.00
9- 2	8221	Finch Bros.	250.00
9- 2	8222	A. L. Champlin	25.00
9- 2	8223	J. Crouch & Son	982.00
9- 2	8224	O. A. Olson	5.00
9- 2	8225	C. H. Backman	5.00
9- 2	8226	C. J. Bray	40.00
9- 2	8227	J. A. Loughridge	70.00
9- 2	8228	Ed. Allen	277.00
9- 2	8229	Harvey Woods	360.00
9- 2	8230	Virgie Barnett	35.00
9- 2	8231	Emory Gibbs	315.00
9- 2	8232	Simon Warner	220.00
9- 2	8233	T. H. Jones	20.00
9- 2	8234	W. M. Woods	180.00
9- 2	8235	R. L. Clevenger	70.00
9- 2	8236	Geo. Wilson	60.00
9- 2	8237	J. A. Loggins	40.00
9- 2	8238	C. S. Buckley	62.00
9- 2	8239	Wm. Anderson & Son	116.00
9- 3	8240	L. H. Pickard & Bro	44.00

9- 3	8241	Wm. Mickel	11.25
9- 3	8242	Wm. Mickel	40.00
9- 3	8243	Otto B. Schultz	12.00
9- 3	8244	J. R. Peak & Son	646.00
9- 3	8245	Joe Kennedy	25.00
9- 3	8246	W. E. Graham	45.00
9- 5	8247	H. H. Smith	30.00
9- 5	8248	International Stock Food Farm	25.00
9- 5	8249	Geo. C. Loomis	28.00
9- 5	8250	International Stock Food Farm	11.00
9- 6	8251	W. S. Van Natta & Son	380.00
9- 7	8252	J. C. Simpson, Secretary	322.00
9- 8	8253	J. Crouch & Son	40.00
9- 9	8254	Charles Irvine	345.00
9-14	8255	A. S. Burr	15.00
9-14	8256	Jas. Riley & Sons	341.00
9-14	8257	W. A. Helsell	110.00
9-14	8258	O. Harris & Son	335.00
9-16	8259	Alice Seymore	92.50
9-16	8260	Rookwood Farm	61.00
9-17	8261	W. E. Shugg	7.00
9-17	8262	M. J. Wragg	149.00
9-17	8263	B. B. Welty	3.00
9-17	8264	W. A. Wickersham	6.00
9-17	8265	Mrs. Adam Stirling	16.00
9-17	8266	Wm. Crownover	20.00
9-17	8267	Marion Speith	.50
9-17	8268	Warren T. McCray	270.00
9-17	8269	Mrs. G. H. Botsford	7.00
9-17	8270	Joseph F. Gissible	130.00
9-17	8271	Mrs. C. B. McClun	4.00
9-17	8272	O. V. Battles	294.00
9-20	8273	Martin Hauge	3.00
9-21	8274	J. S. Fawcett & Son	13.00
9-21	8275	L. C. Alcott	6.00
9-21	8276	L. P. Anderson	29.16
9-21	8277	Mrs. Clara Amend	4.50
9-21	8278	Verna Amend	3.00
9-21	8279	Mrs. T. M. Adams	7.00
9-21	8280	Mrs. N. B. Ashby	6.00
9-21	8281	Jess Alexander	6.50
9-21	8282	A. L. Anderson	43.00
9-21	8283	Naomi Anneberg	2.00
9-21	8284	U. S. Archer	3.00
9-21	8285	Mrs. John Anderson	8.50
9-21	8286	Geo. M. Allee	10.00
9-21	8287	C. S. Buckley	8.00
9-21	8288	G. H. Burge	70.00

9-21	8289	Robt. Burgess & Son	155.00
9-21	8290	W. R. Bennethum	6.00
9-21	8291	A. C. Binnie	290.00
9-21	8292	Andrew Barnes	30.00
9-21	8293	Martha F. Brown	5.00
9-21	8294	Viola M. Brazleton	9.60
9-21	8295	A. H. Bakehouse	90.00
9-21	8296	F. W. Bremer	4.86
9-21	8297	Frank Bowdish	4.86
9-21	8298	C. F. Bollig	14.60
9-21	8299	J. W. Bittenbender	116.00
9-21	8300	C. B. Bracy	9.72
9-21	8301	Joel Bloomster	9.72
9-21	8302	Wm. R. Bittenbender	15.00
9-21	8303	Mrs. P. G. Bishop	19.50
9-21	8304	J. J. Brunner	9.72
9-21	8305	B. F. Bentley	7.30
9-21	8306	G. D. Black	20.80
9-21	8307	E. L. Beck	10.00
9-21	8308	Don G. Berry	14.00
9-21	8309	A. H. Beckwell	4.86
9-21	8310	Mrs. Lake Bower	40.00
9-21	8311	R. Bishard	20.50
9-21	8312	Miss M. L. Bevan	2.00
9-21	8313	Thos. P. Bond	8.00
9-21	8314	D. W. Boydston	3.00
9-21	8315	Chas. Brockenbury	4.00
9-21	8316	Gertrude Brereton	65.00
9-21	8317	Mrs. M. Bredimus	72.40
9-21	8318	L. S. Bergsather	7.30
9-21	8319	Ray F. Bennett	15.00
9-21	8320	W. S. Corsa	534.00
9-21	8321	Fred Crawford	19.00
9-21	8322	O. C. Capper	7.30
9-21	8323	Rose Connor	13.00
9-21	8324	Marjorie Connor	25.00
9-21	8325	E. M. Cathcart	7.00
9-21	8326	Linn Culbertson	35.00
9-21	8327	J. E. Cornwell	8.00
9-21	8328	H. A. Cornwell	3.70
9-21	8329	Wib F. Clements	18.00
9-21	8330	A. P. Chamberlain	6.00
9-21	8331	J. L. Crawford	10.00
9-21	8332	S. B. Cooksley	9.72
9-21	8333	Edgar Chadwick	14.60
9-21	8334	Lester M. Collins	1.00
9-21	8335	C. W. Clute	104.00
9-21	8336	Ida M. Chubb	21.00

9-21	8337	W. H. Curry	5.00
9-21	8338	Mrs. L. H. Curran	13.00
9-21	8339	Ruby Cain	4.00
9-21	8340	Mrs. A. W. Clark	11.00
9-21	8341	Lulah Coonfare	5.50
9-21	8342	Mrs. J. R. Clark	40.00
9-21	8343	Mrs. Anna Cain	4.00
9-21	8344	Mrs. George Coffin	1.00
9-21	8345	Mrs. W. E. Clark	2.00
9-21	8346	Mrs. E. M. Cross	14.00
9-21	8347	Clarence N. Cross	2.00
9-21	8348	H. C. Davis	5.00
9-21	8349	Loren Dunbar	65.00
9-21	8350	H. S. & W. B. Duncan	19.00
9-21	8351	John Donhowe	36.00
9-21	8352	W. H. Dunbar	26.00
9-21	8353	C. B. Dannen	35.00
9-21	8354	C. A. Day	9.72
9-21	8355	Vincent Dougherty	3.20
9-21	8356	Grace Dredge	27.00
9-21	8357	A. J. Dorre	20.00
9-21	8358	Henry Dorr	14.00
9-21	8359	Joseph Dagle	11.00
9-21	8360	N. O. Dahlen	9.72
9-21	8361	Mrs. W. R. Dredge	14.00
9-21	8362	J. M. Diffenbacher	64.00
9-21	8363	O. H. Davis	1.00
9-21	8364	A. J. Doleschal	7.30
9-21	8365	Elmendorf Farm	293.00
9-21	8366	Escher & Ryan	79.00
9-21	8367	Dr. M. M. Evans	7.00
9-21	8368	Mrs. Lucile Eichenlaub	22.50
9-21	8369	Mrs. N. C. Eichenlaub	6.00
9-21	8370	Martin Erickson	1.00
9-21	8371	Mrs. C. J. Eller	19.50
9-21	8372	John Francis & Son	95.00
9-21	8373	Homer F. Farrar	5.00
9-21	8374	W. F. Flyan	4.50
9-21	8375	Mrs. T. J. Flora	16.00
9-22	8376	Carrie B. Farmer	23.00
9-22	8377	Mrs. G. B. Frost	46.50
9-22	8378	T. L. Floden	7.30
9-22	8379	Geo. B. Ferris	17.00
9-22	8380	F. M. Finkbine	4.00
9-22	8381	M. Finkenhazen	2.00
9-22	8382	Mrs. James Fletcher	7.00
9-22	8383	M. Earl Ferris	114.00
9-22	8384	Ida Freedman	3.00

9-22	8385	W. E. Graham	21.00
9-22	8386	Stock Yards Harness & Saddlery Co	100.00
9-22	8387	John Graham & Son	89.00
9-22	8388	H. A. Griesse	4.86
9-22	8389	Mary J. Gaylord	19.00
9-22	8390	D. L. Godden	12.15
9-22	8391	Fleda Grabill	34.00
9-22	8392	Mrs. Harry F. Gross	2.00
9-22	8393	John Grosser	7.30
9-22	8394	Mrs. W. H. Greubel	3.00
9-22	8395	G. J. Gudknecht	17.00
9-22	8396	Chas. O. Garrett	191.00
9-22	8397	Grace Gregory	1.00
9-22	8398	E. A. Gudvangen	2.45
9-22	8399	Mrs. G. N. Grinstead	82.00
9-22	8400	Masie Grinstead	19.00
9-22	8401	Alma Grinstead	18.00
9-22	8402	Mrs. S. E. Gingery	5.50
9-22	8403	Henry George	50.00
9-22	8404	W. W. Gwinn	72.00
9-22	8405	Orville Garrett	14.00
9-22	8406	Guthrie County Farmers' Institute	70.00
9-22	8407	Louisa Gerhardt	2.00
9-22	8408	Mrs. Emma Gerhardt	63.50
9-22	8409	M. Gaul	3.00
9-22	8410	Mrs. Lillian Grinstead	13.00
9-22	8411	Mrs. L. H. Goldsmith	13.00
9-22	8412	Eugene Goldsmith	15.00
9-22	8413	A. J. & E. H. Graves	20.00
9-22	8414	Nell Greaney	33.00
9-22	8415	Mrs. M. N. Guillaume	1.00
9-22	8416	Mrs. Geo. Guillaume	17.00
9-22	8417	B. T. Haulman	40.00
9-22	8418	Chas. Howell	75.00
9-22	8419	E. A. Hess	57.00
9-22	8420	Frank E. Huston	40.00
9-22	8421	Henry Hansen	12.15
9-22	8422	Lewis Hegglund	40.00
9-22	8423	Beva Howard	1.00
9-22	8424	James Fletcher	66.00
9-22	8425	Alvin J. Hed	7.30
9-22	8426	G. T. Shaunce	7.30
9-22	8427	M. E. Henry	12.00
9-22	8428	O. D. Hendershott	7.30
9-22	8429	W. A. Hook	50.00
9-22	8430	Mrs. G. M. Holmes	12.00
9-22	8431	Mrs. Loah Hinshaw	3.00
9-22	8432	N. J. Harris	4.00

9-22	8433	M. J. Harris	6.00
9-22	8434	Wm. Harvey	3.00
9-22	8435	Fred Hansen	7.30
9-22	8436	W. A. Hartman	1.00
9-22	8437	Henry Hilton	150.00
9-22	8438	Walter Hilton	20.00
9-22	8439	Chas. E. Hines	22.00
9-22	8440	A. M. Hansen	7.30
9-22	8441	Frank Hilton	15.00
9-22	8442	Weir Hart	28.00
9-22	8443	F. C. Hollister	8.00
9-22	8444	C. M. Hummer	1.00
9-22	8445	A. J. Herman	7.30
9-22	8446	Ellsworth Harker	85.00
9-22	8447	A. & S. Hanson	20.50
9-22	8448	C. W. Howell	7.00
9-22	8449	C. M. Henley	40.00
9-22	8450	Fred Hood	3.00
9-22	8451	Chas. Herkner	3.00
9-22	8452	John C. Hal	13.50
9-22	8453	S. S. Hudson	9.72
9-22	8454	N. E. Heydon	26.00
9-22	8455	Peter Hove	3.00
9-22	8456	J. Howell	83.00
9-22	8457	F. H. Hollway	36.00
9-22	8458	John A. Huston	9.00
9-22	8459	Mrs. Wm. Harwood	9.00
9-22	8460	Mrs. Jacob Harpel	3.00
9-22	8461	Mrs. R. M. Howell	5.00
9-22	8462	Mrs. F. N. Hollister	1.00
9-22	8463	Gretchen Heath	2.00
9-22	8464	Alice M. Hyde	1.00
9-22	8465	J. M. Hunt	2.00
9-22	8466	Norman Hethershaw	25.00
9-22	8467	Geo. Hutchinson	14.00
9-22	8468	Iowa Floral Co.	79.40
9-22	8469	Iowa Seed Co	180.60
9-22	8470	T. H. Isaac	50.00
9-22	8471	John Justice	6.00
9-22	8472	Ira Jackson	83.00
9-22	8473	H. H. Jensen	4.86
9-22	8474	J. J. Jensen	7.30
9-22	8475	Bertel P. Jurgens	7.30
9-22	8476	Jefferson County Farmers' Institute	50.00
9-22	8477	O. A. Jarshaw	9.72
9-22	8478	W. C. Jacobs	6.00
9-22	8479	Mrs. J. W. Jones	27.50
9-22	8480	F. W. Johnson	11.00

9-22	8481	Charlotte Jackson	18.50
9-22	8482	Alma Jackson	10.00
9-22	8483	Isaac Johnson	49.00
9-22	8484	J. E. F. Johnson	1.50
9-22	8485	Miss E. Jennings	1.00
9-22	8486	F. S. King Bros. Co	76.00
9-22	8487	Carl Keffer	20.00
9-22	8488	Frances Keffer	88.00
9-22	8489	C. F. Knutson	7.30
9-22	8490	Mrs. M. Kastberg	11.00
9-22	8491	Mrs. F. M. Klinck	96.50
9-22	8492	Rena Kastberg	11.00
9-22	8493	Andy Kirsch	16.00
9-22	8494	H. B. Kelley	5.00
9-22	8495	C. A. Kenworthy	3.00
9-22	8496	Mrs. Clara Kaup	3.00
9-22	8497	Mrs. D. D. Keltner	1.00
9-22	8498	W. O. Knapp	5.00
9-22	8499	Nellie Keister	2.00
9-22	8500	L. O. Knudson	14.60
9-22	8501	Henry Lauer	6.00
9-22	8502	Martha Leuty	5.50
9-22	8503	Lena La Plant	1.00
9-22	8504	F. F. Lockwood	9.72
9-22	8505	Mrs. Chas. Lehman	13.50
9-22	8506	R. H. Longworth	85.00
9-22	8507	Sarah Latta	6.50
9-22	8508	Mary J. Latta	52.00
9-22	8509	Mary E. Lowe	2.50
9-22	8510	Mary E. Lowe	6.00
9-22	8511	Robt. Ludberg	4.00
9-22	8512	C. Lhoman	9.00
9-22	8513	H. E. Lozier	136.00
9-22	8514	Lozier Greenhouse Co	68.00
9-22	8515	Harry Livingood	40.00
9-22	8516	Frances Lingenfelter	14.00
9-22	8517	Mrs. R. N. Lewis	61.40
9-22	8518	Mrs. Wm. Lotz	8.50
9-22	8519	Wallace H. Longworth	3.00
9-22	8520	Theo. Martin	49.00
9-22	8521	Will Michael	2.50
9-22	8522	J. A. Mason	34.00
9-22	8523	Mrs. C. E. Monahan	7.00
9-22	8524	Wm. Mason	10.00
9-22	8525	B. F. Malone	138.00
9-22	8526	Harriet Macey	72.50
9-22	8527	C. E. Malone	166.00
9-22	8528	Mrs. Richard Manning	23.50

9-22	8529	R. A. Morningstar	12.00
9-22	8530	C. L. Miller & Son	6.00
9-22	8531	E. A. Mawdsley	18.00
8-22	8532	J. A. Minkel & Co	5.00
9-22	8533	M. C. Miller	2.00
9-22	8534	Wm. Matters	14.60
9-22	8535	Mills County Farmers' Institute	60.00
9-22	8536	Mary A. Moore	24.50
9-22	8537	W. A. Marner	7.00
9-22	8538	D. E. Moffitt	70.00
9-22	8539	Mrs. Frank T. Morris	5.00
9-22	8540	C. E. Mackey	4.00
9-22	8541	Beatrice Mansfield	14.00
9-22	8542	Harriet I. Myers	3.00
9-22	8543	Howard Moffitt	8.00
9-22	8544	Mrs. L. G. Miller	1.50
9-22	8545	Julia Maher	1.00
9-22	8546	Forest B. Myers	1.00
9-22	8547	E. B. Morris	12.50
9-22	8548	Mrs. Chas. Morrison	2.00
9-22	8549	Quirin Moersch	2.00
9-22	8550	Quirin Moersch	.45
9-22	8551	C. E. Mincer	146.00
9-22	8552	Vern D. Minchener	2.00
9-22	8553	Claude R. Malone	3.00
9-22	8554	L. F. Myers	7.30
9-22	8555	McLay Bros.	267.00
9-22	8556	H. G. McMillan & Sons	78.00
9-22	8557	Warren T. McDonald	3.00
9-22	8558	Geo. McKerrow & Son	139.00
9-22	8559	W. A. McHenry	418.00
9-22	8560	C. D. McPherson	121.00
9-22	8561	J. J. McMahon	30.00
9-22	8562	Fred McCulloch	116.00
9-22	8563	Mrs. F. W. McIntire	11.00
9-22	8564	Florence McGovern	4.00
9-22	8565	H. A. McCoffin	5.00
9-22	8566	R. M. McCarty	2.00
9-22	8567	Catherine N. McCartney	67.50
9-22	8568	Mrs. G. E. McKinnon	2.00
9-22	8569	M. McCurnin	2.00
9-22	8570	A. B. McKeag	9.00
9-22	8571	Bruce Mac Donald	10.00
9-22	8572	Magdalin Neilson	5.00
9-22	8573	L. P. Nelson	7.30
9-22	8574	C. A. Nurrel	21.90
9-22	8575	Mrs. F. A. Nordblow	2.00
9-22	8576	Mrs. W. E. Newell	.50

9-22	5577	B. S. Nelson	17.00
9-22	8578	Mrs. Ada Newquist	13.50
9-22	8579	Miller S. Nelson	90.00
9-22	8580	Louise H. Orwig	18.00
9-22	8581	O. Osborne	40.00
9-22	5882	W. F. Otcheck	75.00
9-22	8583	N. Overgaard	17.00
9-22	8584	Tom Oxenfield	3.00
9-22	8585	Mrs. J. D. Owen	1.50
9-22	8586	E. B. Olds	7.30
9-22	8587	H. H. Powell & Son	12.00
9-22	8588	Mrs. J. A. Peters	8.00
9-22	8589	A. L. Plummer	110.00
9-22	8590	E. L. Pearson	30.00
9-22	8591	P. W. Pitt	6.00
9-22	8592	Lon Pollock	1.00
9-22	8593	Mrs. Chas. N. Peirce	4.00
9-22	8594	Winifred Poorman	40.00
9-22	8595	Elliott Purmort	4.00
9-22	8596	Mrs. H. S. Purchase	3.00
9-22	8597	J. A. Peterson	7.30
9-22	8598	Edna M. Patzig	8.00
9-22	8599	Walter H. Plows	110.00
9-22	8600	S. H. Page	12.00
9-22	8601	Thos. H. Plows	2.00
9-22	8602	Mrs. Ida Perkins	7.50
9-22	8603	Mabelle Perkins	1.00
9-22	8604	Inez Powers	3.00
9-22	8605	Mrs. N. P. Peterson	1.00
9-22	8606	W. Patterson	16.00
9-22	8607	Mathilda Peterson	24.00
9-22	8608	S. A. Powers & Son	9.00
9-22	8609	Della G. Penn	5.00
9-22	8610	J. F. Perry	6.50
9-22	8611	Mrs. E. H. Pickering	11.00
9-22	8612	Mrs. W. H. Peiffer	3.50
9-22	8613	J. J. Proudfit	3.00
9-22	8614	Clarence Prentice	3.00
9-22	8615	Claude A. Paterson	15.00
9-22	8616	Edna Patterson	3.00
9-22	8617	Grace Patterson	2.75
9-22	8618	Cecil Proudfit	2.00
9-22	8619	Vesta Plummer	5.00
9-22	8620	W. T. Roberts	2.00
9-22	8621	Geo. S. Redhead	52.00
9-22	8622	Mrs. Cora F. Reed	4.00
9-22	8623	Mrs. Mary Ross	57.00
9-22	8624	W. A. Rizer	7.30

9-22	8625	May Reinemuhd	6.00
9-22	8626	H. Rollinson	60.00
9-22	8627	J. A. Ryan	6.00
9-22	8628	Mrs. N. A. Ranck	3.00
9-22	8629	Walter F. Reppert	1.00
9-22	8630	J. H. Bakken	9.72
9-22	8631	Mrs. W. H. Rasmussen	7.00
9-22	8632	F. L. Reinhard	21.00
9-22	8633	C. W. Reeder	5.50
9-22	8634	N. H. Retsloff	1.50
9-22	8635	H. H. Rich	18.50
9-22	8636	Edwin Rosengren	1.00
9-22	8637	D. W. Rich	16.00
9-22	8638	F. G. Roberts	242.50
9-22	8639	Mrs. J. C. Riddle	7.00
9-22	8640	Geo. Rawlings	100.00
9-22	8641	M. C. Raney	4.00
9-22	8642	Anna Redhead	6.00
9-22	8643	Mildred Redhead	3.50
9-22	8644	C. A. Saunders	204.00
9-22	8645	T. Swearingen	15.00
9-22	8646	Frank Shekleton	10.00
9-22	8647	O. C. Barber	6.00
9-22	8648	A. G. Shandel	7.30
9-22	8649	Watson Shick	7.30
9-22	8650	Myrtle Steers	4.00
9-22	8651	Sam Savereid	2.45
9-22	8652	Angelina St. John	24.00
9-22	8653	Frank Sar	30.00
9-22	8654	Mrs. Susie Snyder	12.00
9-22	8655	S. A. Shetterly	134.00
9-22	8656	Herbert Soballe	9.72
9-22	8657	H. B. Shirk	17.80
9-22	8658	B. Stuart	91.50
9-22	8659	Maude Stockham	20.00
9-22	8660	Grace Sweet	11.00
9-22	8661	Lena A. Sheldon	10.00
9-22	8662	R. S. Salyards	7.00
9-22	8663	E. C. Salisbury	4.80
9-22	8664	F. W. Stolt	14.00
9-22	8665	M. L. Seeley	1.00
9-22	8666	W. M. Shaw & Co.	16.00
9-22	8667	Mrs. S. A. Stuart	5.00
9-22	8668	A. Stocker	8.00
9-22	8669	Mrs. Louise Smith	16.00
9-22	8670	J. Sundberg	30.00
9-22	8671	Mrs. Lottie Sutherland	1.00
9-22	8672	J. S. Shannon	16.00

9-22	8673	Mrs. Saul Stutsman	34.80
9-22	8674	Miss Edith Snyder	4.00
9-22	8675	Sestier Bros.	25.00
9-22	8676	Mrs. Sarah Smithson	4.00
9-22	8677	Lawrence Stuart	15.50
9-22	8678	Sigourney Corn Club	40.00
9-22	8679	Marie Stehm	1.50
9-22	8680	Mrs. Harry M. Stone	8.50
9-22	8681	Rex Stark	3.00
9-22	8682	Mary Spates	14.50
9-22	8683	J. F. Sieberling	2.00
9-22	8684	Thos. E. Sadler	19.44
9-22	8685	D. Tietjen	181.00
9-22	8686	E. B. Thomas	5.00
9-22	8687	Void.	
9-22	8688	Truman's Pioneer Stud Farm	320.00
9-22	8689	H. M. Templeton & Son	10.00
9-22	8690	Mrs. Ira B. Thomas	17.50
9-22	8691	Mrs. Nat Thompson	7.00
9-22	8692	Lillian M. Thornton	15.50
9-22	8693	Mrs. Wm. Thornton	3.00
9-22	8694	J. L. Todd	79.00
9-22	8695	Miss M. J. Thomas	5.00
9-22	8696	Letta M. Thornton	13.00
9-22	8697	Mrs. W. D. Tapp	32.00
9-22	8698	Marguerite Tapp	19.00
9-22	8699	Trillows' Greenhouses	169.60
9-22	8700	Bertha Tennant	1.00
9-22	8701	Mrs. M. L. Toland	2.00
9-22	8702	S. H. Tomlinson	12.00
9-22	8703	Dorothea Tomlinson	8.00
9-22	8704	Mrs. C. W. Tester	1.00
9-22	8705	Herman Umfried	1.00
9-22	8706	C. E. Veak	2.00
9-22	8707	W. F. Volz	4.00
9-22	8708	Mrs. H. J. Van de Waa	4.00
9-22	8709	Wilson O. Stewart	8.00
9-22	8710	Wilcox & Stubbs	52.00
9-22	8711	W. B. Wilson	1.50
9-22	8712	G. H. White	171.00
9-22	8713	R. E. West	17.00
9-22	8714	James Watt	45.00
9-22	8715	John W. Windfelt	4.86
9-22	8716	Lizzie Weaver	12.50
9-22	8717	Louise Webster	2.00
9-22	8718	Emma Wolter	51.50
9-22	8719	Flora Wolter	7.50
9-22	8720	Florence M. Weaver	18.00

9-22	8721	F. F. Werner	58.00
9-22	8722	Mary E. Wayman	1.00
9-22	8723	T. H. West	6.50
9-22	8724	Irene C. Wilson	32.00
9-22	8725	Warren County Farmers' Institute	30.00
9-22	8726	A. E. Walker	1.50
9-22	8727	W. T. Wilkinson	3.00
9-22	8728	J. C. Watts	3.00
9-29	8729	Hazel Wheeler	21.00
9-22	8730	Mrs. M. B. Wheeler	4.00
9-22	8731	Cecil West	6.50
9-22	8732	Kenneth West	2.00
9-22	8733	Mrs. J. M. White	2.00
9-22	8734	Mrs. Ella Wells	52.00
9-22	8735	John Wehling	9.72
9-22	8736	J. Richard Woodruff	3.75
9-22	8737	Mrs. Joseph Wills	10.00
9-22	8738	J. S. Wilson Floral Co	31.00
9-22	8739	E. P. Worcester	4.00
9-22	8740	Mrs. E. R. Wagner	1.00
9-22	8741	Wood Bros.	70.00
9-22	8742	Mrs. C. A. Wineman	1.50
9-22	8743	Robt. Wagner	2.45
9-22	8744	Anna B. Youtsey	6.40
9-22	8745	Van Buren Yant	2.00
9-22	8746	James Yuill	5.00
9-22	8747	F. M. Zell	7.30
9-22	8748	J. M. Zubrod	7.30
9-22	8749	Willard Zeller	14.00
9-26	8750	Mary J. Gaylord	1.00
10- 1	8751	Mary J. Latta	.50
10- 1	8752	C. F. Curtiss, Dean	950.00
10- 1	8753	Lonnie Freeman	50.00
10- 7	8754	G. D. Black	3.40
10-18	8755	Tom Oxenfield	1.00
10-20	8756	Kate Sullivan	56.00
10-20	8757	H. C. Moeller	14.00
10-20	8758	Chas. E. Blodgett	5.00
10-20	8759	Thomas E. Johnson	1.00
10-20	8760	W. F. Cramer	3.00
10-20	8761	A. Palmer	32.00
10-20	8762	Z. C. Thornburg	107.00
10-20	8763	R. A. Sell	22.00
10-20	8764	Clara Peters	5.00
10-20	8765	Margaret Countryman	15.00
10-20	8766	Elizabeth Noethe	2.00
10-20	8767	Joanna Gaffney	1.00

10-20	8768	B. E. Myers	34.00
10-20	8769	Fred S. Growe	9.00
10-20	8770	O. H. Benson	97.00
10-20	8771	Void.	
10-20	8772	Lena Jones	13.00
10-20	8773	Leffie A. Doolittle	2.00
10-20	8774	J. R. Wilson	4.00
10-31	8775	W. F. Otcheck	5.00
		Total	$49,717.50

EXPENSE WARRANTS ISSUED DECEMBER 1, 1909—NOVEMBER 30, 1910.

12- 8	7654	W. R. Mellor, expense attending committee meeting	$15.00
12- 9	7655	Jno. Ledgerwood, special committee work	17.00
12- 9	7656	Martha Baber, claim for injuries 1910 fair	30.00
12-10	7657	C. E. Cameron, December meeting	38.00
12-10	7658	W. C. Brown, December meeting	34.20
12-10	7659	R. S. Johnston, December meeting	39.80
12-10	7660	C. W. Phillips, December meeting	45.00
12-10	7661	Elmer M. Reeves, December meeting	36.30
12-10	7662	E. J. Curtin, December meeting	43.50
12-10	7663	E. M. Wentworth, December meeting	12.00
12-10	7664	T. C. Legoe, December meeting	32.50
12-10	7665	C. F. Curtiss, December meeting	27.70
12-10	7666	Jno. Ledgerwood, December meeting	30.40
12-10	7667	M. McDonald, December meeting	18.50
12-10	7668	Chas. Escher, Jr., December meeting	12.00
12-10	7669	O. A. Olson, December meeting	39.50
12-10	7670	H. L. Pike, December meeting	44.00
12-10	7671	C. E. Cameron, special committee work	31.45
12-10	7672	W. C. Brown, special committee work	30.15
12-13	7673	Chas. Weitz Sons, balance on horse barn	2,356.60
12-13	7674	J. C. Simpson, expense special committee work	29.80
12-13	7675	H. C. Hargrove, refund for admission 1909 fair	1.00
12-13	7676	Cancelled.	
12-14	7677	M. McDonald, expense Soldiers' Day, 1909 fair	5.00
12-14	7678	A. J. Weander, refund exhibitors 'ticket, 1909 fair.	2.00
12-14	7679	A. O. Harpel, photos agricultural exhibit, 1909 fair.	6.00
12-14	7680	Stoner Wall Paper Mfg. Co., cloth signs educational department	4.30
12-14	7681	W. H. Brereton, extra on cattle barn	34.00
12-14	7682	J. T. Fredergill, hauling sand	3.40
12-14	7683	Geo. E. Rees, horse shoeing	11.75
12-14	7684	Emerson Mfg. Co., supplies (Grounds Dept.)	1.55

12-14	7685	Postal Telegraph Co., messages	.50
12-14	7686	Langan Bros. Co., one book (Swine Dept.) 1909 fair	.90
12-14	7687	Des Moines Water Co., November water bill	18.14
12-14	7688	Western Union Telegraph Co., November messages	.93
12-14	7689	Mutual Telephone Co., November toll bill	.25
12-14	7690	Iowa Pipe & Tile Co., sewer pipe and tile	40.56
12-14	7691	A. V. Storm, balance pay roll 1909 fair	12.00
12-14	7692	I. S. C. of Agriculture and Mechanic Arts, 1.88 T. alfalfa, 1909 fair	22.56
12-14	7693	I. S. C. of Agriculture and Mechanic Arts, expense college exhibit 1909 fair	29.75
12-14	7694	Mrs. L. D. Sims, dish washing, Horticulture Dept.	5.40
12-14	7695	Nichols Roofing Co., 1 bbl. roofing tar	4.50
12-14	7696	Wheeler Lumber, B. & S. Co., oak timbers	1.13
12-14	7697	Wm. Watson, repairing locks and keys	3.40
12-14	7698	Jas. H. Deemer, superintendent, to balance pay roll account 1909 work	93.10
12-14	7699	Backman Sheet Metal Works, metal work Administration building	270.45
12-30	7700	W. C. Brown, expense for stenographer 1909 fair	13.00
12-31	7701	Des Moines Bridge & Iron Works, balance on contracts	3,000.00
12-31	7702	J. C. Simpson, salary December meeting, and clerk executive committee	100.00
12-31	7703	A. R. Corey, salary for December	100.00
12-31	7704	Jas. H. Deemer, salary for December	83.33
12-31	7705	Elsie Colton, salary for December	25.00
12-31	7706	Elsie Colton, salary for December	75.00
1- 4	7707	B. W. Crossley, expense agricultural exhibit 1909 fair	27.57
1- 6	7708	Jas. Lacey, hauling tile	3.50
1- 6	7709	A. Olson, hauling cinders	72.00
1- 6	7710	W. C. Nichols, work on drain for amphitheatre	4.75
1- 6	7711	Ed McCowan, work on drain for amphitheater	30.40
1- 6	7712	John Dix, hauling cinders	22.00
1- 6	7713	Henry Grandgeorge, work on drain for amphitheater	21.75
1- 6	7714	Fred Kirk, work on drain for amphitheater	7.00
1- 6	7715	Henry Deets, hauling cinders	15.00
1- 6	7716	Mrs. Jas. H. Deemer, boarding help	15.00
1-10	7717	J. I. Myerly, P. M., postage for board 1909	60.00
1-10	7718	Miss K. Baumgartner, payment for lost articles, 1909 fair	25.00
1-19	7719	B. W. Crossley, exhibit of farm crops, 1909 fair	8.50
1-21	7720	H. F. Deets, hauling cinders	22.00
1-21	7721	Ben Weise, hauling cinders	23.75
1-21	7722	A. Olson, hauling cinders	24.75

1-21	7723	S. T. Wilson, shoveling snow	4.50
1-21	7724	J. L. Dean, shoveling snow	11.00
1-21	7725	D. Stearns, repairing plow	3.00
1-21	7726	Ed McKowan, shoveling snow	11.00
1-21	7727	H. E. Jeffers, corn for mules	18.17
1-31	7728	Jas. H. Deemer, salary for January	83.33
1-31	7729	A. Olson, hauling cinders	30.75
1-31	7730	Ben Weise, hauling cinders	28.75
1-31	7731	Henry Deets, hauling cinders	21.00
1-31	7732	Elsie Colton, salary for January	100.00
1-31	7733	A. R. Corey, salary for January	100.00
1-31	7734	Russels Railway Guide, subscription to Feb., 1911.	2.00
1-31	7735	Des Moines Daily News, subscription to Jan. 1, 1910	3.75
1-31	7736	Farmers & Drovers Journal, subscription to Feb. 1, 1911	4.00
1-31	7737	The Billboard Pub. Co., subscription to Feb. 1, 1911	4.00
1-31	7738	J. C. Simpson, salary member and clerk of executive committee	100.00
1-31	7739	J. C. Simpson, expense special committee work	18.20
2- 4	7740	C. E. Cameron, executive committee meetings	60.00
2- 4	7741	W. C. Brown, executive committee meetings	52.40
2- 4	7742	T. C. Legoe, special committee work	20.50
2-10	7743	O. A. Olson, special committee work	27.50
2-11	7744	C. E. Cameron, per diem and mileage	26.00
2-11	7745	W. C. Brown, per diem and mileage	22.20
2-11	7746	R. S. Johnston, per diem and mileage	27.80
2-11	7747	Elmer M. Reeves, per diem and mileage	24.30
2-11	7748	E. J. Curtin, per diem and mileage	31.50
2-11	7749	E. M. Wentworth, per diem and mileage	18.00
2-11	7750	T. C. Legoe, per diem and mileage	16.50
2-11	7751	C. F. Curtiss, per diem and mileage	15.70
2-11	7752	John Ledgerwood, per diem and mileage	18.40
2-11	7753	Chas. Escher, Jr., per diem and mileage	22.00
2-11	7754	H. L. Pike, per diem and mileage	32.00
2-14	7755	Ben Weise, hauling cinders	18.00
2-14	7756	A. Olson, hauling cinders	27.75
2-14	7757	Henry Deets, hauling cinders	21.00
2-14	7758	B. E. Gregory, refund Indian Village, 1909 fair	79.33
2-17	7759	Iowa Telephone Co., January toll bill and rental	17.55
2-28	7760	J. C. Simpson, expense special committee work	40.66
2-28	7761	Jas. H. Deemer, salary for February	83.33
2-28	7762	Elsie Colton, salary for February	100.00
2-28	7763	A. R. Corey, salary for February	100.00
2-28	7764	J. C. Simpson, salary member and clerk executive committee	100.00
2-28	7765	Ben Weise, hauling cinders	15.00
2-28	7766	Henry Deets, hauling cinders	14.00
2-28	7767	Postal Telegraph Co., two messages	1.13

2-28	7768	Wixcell Mfg. Co., refund exhibitors ticket 1909 fair	2.00
3- 2	7769	John Ledgerwood, special committee work........	33.50
3- 3	7770	Western Union Telegraph Company, messages....	3.86
3- 3	7771	Ross & Ross, hack, "Old Soldiers' Day," 1909 fair..	2.00
3- 3	7772	Mutual Telephone Co., phone rental first quarter..	8.25
3- 3	7773	Adams Express Co., November express bill	.20
3- 3	7774	American Express Co., November and December express bills	2.18
3- 3	7775	Pacific Express Co., June, July, August and September bills	2.06
3- 3	7776	U. S. Express Co., fair week express bills........	12.34
3- 3	7777	Wells Fargo Express Co., November and December bill	2.00
3- 3	7778	R. L. Polk & Co., city directory	6.00
3- 3	7779	D. M. Rubber Stamp Works, four stamps..........	.50
3- 3	7780	D. M. Capital, subscription to Feb. 1, 1910........	3.00
3- 3	7781	D. M. Commercial Club, dues for 1910	15.00
3- 3	7782	D. E. Moon, printing	61.25
3- 3	7783	O'Dea Hardware Co., hardware supplies	15.10
3- 3	7784	Standard Glass & Pt. Co., glass for Administration building	1.81
3- 3	7785	Merchants Transfer & Storage Company, wire stretcher	3.00
3- 3	7786	Chas. Koeningsberger, harness supplies	8.35
3- 3	7787	John Hamilton, dues Am. Ass'n Farmers' Inst....	5.00
3- 5	7788	E. D. Chassell, binding awards 1909 fair..........	2.00
3- 5	7789	Ferguson Printing Co., printing posters..........	6.00
3- 8	7790	Robt. F. Hildebrand, panorama pictures	117.00
3- 8	7791	Ben Murrow, corn for mules	28.80
3-12	7792	W. C. Brown, meeting executive committee	34.20
3-12	7793	C. E. Cameron, meeting executive committee	51.00
3-12	7794	J. I. Myerly, P. M., postage fair and "Greater Iowa"	50.00
3-15	7795	Henry Deets, work fair grounds	20.00
3-15	7796	Ben Weise, hauling cinders	35.25
3-15	7797	Jos. Phelan, hauling cinders	17.50
3-19	7798	Central Wire & Iron Co., fencing around track....	100.00
3-25	7799	W. C. Brown, expense Chicago meeting	38.70
3-26	7800	J. C. Simpson, expense Chicago meeting..........	38.40
3-26	7801	C. & N. W. Ry Co., freight on grass seed........	2.24
3-26	7802	J. M. Bovey, work on paddock and center field....	14.00
3-29	7803	Ben Weise, hauling cinders	16.50
3-29	7804	John Dean, work on paddock and center field.....	28.00
3-29	7805	Leonard Diggs, work on paddock and center field..	12.00
3-29	7806	Homer Wilson, work on paddock and center field..	4.00
3-29	7807	Henry Deets, work on paddock and center field....	10.00
3-31	7808	Jas. Deemer, salary for March	83.33
3-30	7809	J. C. Simpson, expense meeting N. E. Iowa Fairs..	9.96

3-30	7810	J. C. Simpson, member and six months dues "Admen's Club"	10.00
3-31	7811	J. C. Simpson, extra services, member and clerk executive committee	150.00
3-31	7812	A. R. Corey, salary for March	100.00
3-31	7813	Elsie Colton, salary March	100.00
4- 4	7814	The Matthews Carriage Co., supplies and repairs	53.45
4- 4	7815	Goodwin Tile & Brick Co., drain from amphitheater	73.58
4- 4	7816	Ben Woolgar, horse-shoeing	5.50
4- 4	7817	Remington Typewriter Co., two ribbons	.76
4- 4	7818	Eva Vieser, lettering panoramas	2.50
4- 4	7819	Buck Bros., twelve picture frames	44.20
4- 4	7820	Iowa Lithographing Co., letter heads for board	51.55
4- 4	7821	Shannon & Mott Co., 100 sacks (1909 fair)	6.00
4- 4	7822	S. Davidson & Bros., carpet sweepers Administration building	6.20
4- 4	7823	Des Moines Water Co., water, December, January, February and March	15.27
4- 4	7824	H. S. Deets, painting smokestacks	20.00
4- 4	7825	H. P. Stauffer, work on swine pavilion and lawn seats	18.00
4-11	7826	J. I. Whitmer, grading around amphitheater	2.00
4-11	7827	S. T. Wilson, transplanting trees	2.00
4-11	7828	H. F. Deets, work on swine pavilion	3.00
4-11	7829	J. M. Bovey, grading around amphitheatre	24.00
4-11	7830	Leonard Diggs, grading around amphitheater	24.00
4-11	7831	Homer Wilson, grading around amphitheater	2.00
4-11	7832	Henry Kurtz, transplanting trees	8.00
4-11	7833	J. L. Dean, work around amphitheater	23.00
4-11	7834	J. I. Myerly, postage	50.00
4-20	7835	C. E. Cameron, expense Chicago meeting	35.36
4-20	7836	W. C. Brown, executive committee meeting	26.20
4-22	7837	C. E. Cameron, special and executive committee work	56.05
4-25	7838	J. C. Simpson, secretary, pay roll grounds department	208.25
4-26	7839	J. C. Simpson, expense special committee work	20.60
4-26	7840	C. E. Powers, 71 bushels oats for mules	31.95
4-29	7841	H. F. Deets, painting swine pavilion	22.50
4-30	7842	J. C. Simpson, extra services clerk and member executive committee	150.00
4-30	7843	A. R. Corey, salary for April	100.00
4-30	7844	Elsie Colton, salary for April	100.00
4-30	7845	Jas. H. Deemer, salary for April	83.33
5- 4	7846	Billboard Publishing Co., pro rata share "ad" for Chicago meeting	7.00
5- 7	7847	Switchmen's Union, 1-3 page ad in program	10.00
5- 7	7848	E. B. Mendsen, expense on trade excursion	32.00

5- 7	7849	J. I. Myerly, P. M., postage stamps	50.00
5- 7	7850	Register & Leader, subscription February 1, 1909, to February 1, 1910	6.00
5- 9	7851	Wallaces Farmer, 4M 8-page Greater Iowa	55.00
5- 9	7852	C. C. Printing Plate Co., 30 electros	13.40
5- 9	7853	J. C. Simpson, secretary, pay roll grounds department	257.62
5-12	7854	J. I. Myerly, P. M., postage premium list	60.00
5-13	7855	W. C. Brown, work privilege department	26.20
5-16	7856	J. I. Myerly, P. M., postage 3,200 Greater Iowa	32.00
5-16	7857	Charlotte Lang, two days folding Greater Iowa	3.00
5-17	7858	J. I. Myerly, P. M., postage 2,600 premium lists	78.00
5-18	7859	N. G. Phillips, 37 bushels corn	23.03
5-21	7860	C. E. Cameron, expense special committee work, meeting executive committee	54.05
5-21	7861	W. C. Brown, meeting executive committee	22.20
5-23	7862	J. C. Simpson, secretary, pay roll grounds department	259.13
5-24	7863	Wm. Jackson, refund speed department	12.00
5-25	7864	Vaughns Seed Store, grass seed, paddock	71.79
5-25	7865	The Calif. Track Harrow Co., 1 casting	2.00
5-31	7866	J. C. Simpson, extra services, member and clerk executive committee	150.00
5-31	7867	Jas. H. Deemer, salary for May	83.33
5-31	7868	A. R. Corey, salary for May	100.00
5-31	7869	Elsie Colton, salary for May	100.00
6- 3	7870	J. I. Myerly, P. M., postage 3,900 premium lists	117.00
6- 4	7871	C. G. Morrison, 50 tons straw forage	300.48
6- 5	7872	McRae Construction Co., balance on cement walks	234.24
6- 6	7873	J. C. Simpson, secretary, pay roll grounds department	307.15
6-10	7874	C. E. Cameron, meeting executive committee	30.00
6-10	7875	W. C. Brown, meeting executive committee	18.20
6-17	7876	J. I. Myerly, P. M., postage stamps	50.00
6-18	7877	A. B. Curry, 358 bushels oats, forage department	161.25
6-18	7878	J. I. Myerly, P. M., postage 2,800 Greater Iowa	28.00
6-20	7879	C. & N. W. Ry. Co., freight on lawn seats	19.25
6-20	7880	Frank Leslie, electrical supplies and work account 1909 bill	14.15
6-20	7881	J. C. Simpson, secretary, Adv. Iowa, Nebraska, and South Dakota speed events	48.56
6-20	7882	J. C. Simpson, secretary, pay roll grounds department	393.80
6-20	7883	A. Olson, laying shingles peed barn No. 3	18.75
	7884	Cancelled.	
6-22	7885	Iowa Telephone Co., material and construction work	298.23
6-25	7886	Spirit of the West, Adv. speed program	62.50

6-27	7887	American Trotting Registry Ass'n, Vol. 25, Year Book	5.00
6-27	7888	American Express Co., February, March, April and May bills	11.86
6-27	7889	Adams Express Co., March, April and May bills	2.40
6-27	7890	Breeders' Gazette, two books	2.71
6-27	7891	Bishard Bros., printing speed list	24.00
6-27	7892	Billboard Publishing Co., advertising for attractions	16.80
6-27	7893	Baker Trisler Co., office supplies	11.66
6-27	7894	Des Moines Paper Box Co., 1,000 mailing tubes	9.20
6-27	7895	Des Moines Engraving Co., cuts for "Greater Iowa"	77.04
6-27	7896	Des Moines Water Co., water April and May, and repairs	33.77
6-27	7897	French Coach Horse Society of America, stud book	1.00
6-27	7898	Mrs. J. C. Fuson, unpaid premium warrant, 1909	2.00
6-27	7899	Ferguson Printing Co., printing	5.00
6-27	7900	Iowa Litho. Co., 4,000 letter heads	18.75
6-27	7901	Iowa Telephone Co., toll bill by Curtiss from Ames	.95
6-27	7902	Iowa Telephone Co., 'phone rental fair grounds, February, March, April and May bills	21.25
6-27	7903	Geo. A. Miller Ptg. Co., printing	72.90
6-27	7904	Merchants Transfer & Storage Co., freight and drayage	8.77
6-27	7905	D. E. Moon, printing	29.90
6-27	7906	Mutual Telephone Co., February, March, April, and May bills, 'phone rental fair grounds	11.00
6-27	7907	Pratt Mendsen Paper Co., 12,000 P. L. envelopes	18.36
6-27	7908	C. N. Pumphrey, composition from P. L.	2.97
6-27	7909	Postal Telegraph Co., May bill	.40
6-27	7910	Register and Leader, printing and engraving	96.45
6-27	7911	The Show World, subscription April 2, 1910, to April 2, 1911	4.00
6-27	7912	H. E. Talbot, visit and operation on mule	1.50
6-27	7913	U. S. Express Co., February, March, April, and May bills	8.33
6-27	7914	J. H. Welch Ptg. Co., printing	41.00
6-27	7915	Wallaces Farmer, printing "Greater Iowa"	26.35
6-27	7916	Western Union Telegraph Co., messages by Curtiss (Ames)	2.16
6-27	7917	Western Union Telegraph Co., February, March, April and May bills	18.85
6-27	7918	Wells Fargo Express Co., March, April and May bills	2.36
6-27	7919	A. Olson, laying shingles speed barn No. 3	29.68
6-30	7920	J. C. Simpson, extra services, member and clerk executive committee	150.00
6-30	7921	A. R. Corey, salary for June	100.00
6-30	7922	Elsie Colton, salary for June	100.00

6-30	7923	Jas. H. Deemer, salary for June	83.33
6-30	7924	Edith K. Smith, balance salary for June	55.00
6-30	7925	Clifford C. Heer, extra clerk June 13-30	36.00
6-30	7926	R. S. Johnston, meeting auditing committee	27.80
6-30	7927	T. C. Legoe, meeting auditing committee	20.50
6-30	7928	C. & N. W. Ry. Co., freight on 2 bbls. paint	3.92
7- 2	7929	J. I. Myerly, P. M., postage "Greater Iowa"	34.00
7- 3	7930	J. C. Simpson, secretary, pay roll grounds department	625.30
7- 5	7931	J. I. Myerly, P. M., postage stamps	30.00
7- 7	7932	D. M. Daily News, subscription January 1, 1910, to January 1, 1911	3.60
7- 8	7933	C. E. Cameron, meeting executive committee	26.00
7- 9	7934	Potts Bros., cement and sand	76.00
7-12	7935	Valley National Bank, draft Alfalfa Feed & Grain Co., car alfalfa forage	136.39
7-12	7936	J. I. Myerly, P. M., postage stamps	50.00
7-12	7937	C. & N. W. Ry. Co., freight	4.48
7-14	7938	W. C. Brown, privilege work	48.40
7-16	7939	Hawkeye Press Clipping Bureau, press clippings	24.00
7-18	7940	J. C. Simpson, secretary, pay roll grounds department	684.49
7-19	7941	C. & N. W. Ry. Co., freight on B. B. paper	1.52
7-22	7942	A. Olson, laying shingles on barn No. 8	65.94
7-23	7943	C., R. I. & P. Ry. Co., freight on alfalfa	47.70
7-23	7944	C., N. W. Ry. Co., freight on B. B. paper	1.07
7-25	7945	J. I. Myerly, P. M., postage stamps	50.00
7-25	7946	A. R. Corey, expense bill	4.00
7-25	7947	Potts Bros., payment on contract flooring amphitheater	1,500.00
7-26	7948	Ed Stuart, oats for mules	26.50
7-27	7949	Claire Burkhardt, services "Home Coming Week"	12.40
7-27	7950	J. I. Myerly, P. M., postage "Greater Iowa"	40.00
7-28	7951	W. C. Brown, meeting executive committee, privilege work	30.20
7-28	7952	C. E. Cameron, meeting executive committee	30.00
7-30	7953	J. C. Simpson, extra services as member and clerk executive committee	150.00
7-30	7954	A. R. Corey, salary for July	100.00
7-30	7955	Elsie Colton, salary for July	100.00
7-30	7956	Jas. H. Deemer, salary for July	83.33
7-30	7957	Clifford C. Heer, extra clerk, July	50.00
7-30	7958	Chas. Roe, extra clerk July	22.00
7-30	7959	Clarence Shivers, extra clerk July	27.00
7-30	7960	A. Olson, laying shingles speed barn	26.25
7-30	7961	J. C. Simpson, secretary, pay roll grounds department	897.82
8- 2	7962	J. T. Fredregill, brick work, amphitheater booth	54.00

8- 2	7963	J. I. Myerly, P. M., postage stamps	50.00
8- 4	7964	C. & N. W. Ry Co., freight, closet casting	3.50
8- 4	7965	Merchants Transfer & Storage Co., freight on dynamo	49.39
8- 4	7966	Walter Hunt, repairing locks Administration budiling	5.40
8- 4	7967	W. H. Watson, fitting keys to locks in Administration building	9.60
8- 6	7968	Matt Parrott & Sons, large outdoor signs	137.74
8- 9	7969	C. E. Cameron, meeting executive committee	22.00
8-10	7970	H. L. Pike, special committee work	84.00
8-10	7971	R. S. Johnston, special committee work	27.80
8-10	7972	J. I. Myerly, P. M., postage stamps	50.00
8-11	7973	W. C. Brown, special committee work	25.50
8-11	7974	A. E. Holmes, engineering work around grand stand	18.00
8-12	7975	A. Olson, laying shingles	20.90
8-12	7976	E. J. Bishop, forage department hay	15.50
8-13	7977	Centaur Wire & Iron Works, fencing and hay racks	91.30
8-13	7978	G. A. Payne, advertising City of Ottumwa	4.00
8-13	7979	R. L. Allen, Advertising Wright County	10.00
8-13	7980	G. A. Minnich, Advertising Carroll County	15.00
8-13	7981	Henry Gerdes, advertising Wayne County	15.00
8-13	7982	J. I. Myerly, P. M., postage "Greater Iowa"	20.00
8-15	7983	E. J. Bishop, forage department, hay	14.10
8-15	7984	C. E. Cameron, meeting executive committee	26.00
8-16	7985	J. I. Myerly, P. M., postage "Greater Iowa"	20.50
8-16	7986	Walter A. Hunt, repairing stiles and locks	20.25
8-16	7987	J. C. Simpson, secretary, pay roll grounds department	1,012.22
8-16	7988	Iowa Register and Farmer, display advertising	196.00
8-16	7989	Chas. Porter, advertising Marion County	12.00
8-17	7990	W. H. Reed, advertising Kossuth County	15.00
8-17	7991	G. M. Rouse, advertising Hamilton County	15.00
8-17	7992	J. T. Porter, Advertising Monroe County	12.00
8-17	7993	Geo. E. Bliss, advertising Adams County	10.00
8-17	7994	Chas. F. Leach, advertising Davis County	12.00
8-17	7995	Chas. Fletcher, advertising Johnson County	10.00
8-17	7996	H. S. Martin, advertising Hardin County	15.00
8-17	7997	G. S. Gilbertson, treasurer, 168 Pd. Adm. advertising, D. News	84.00
8-18	7998	J. I. Myerly, P. M., postage	50.00
8-20	7999	Geo. A. Miller Ptg. Co., payment printing tickets	300.00
8-20	8000	F. E. Meredith, advertising Jasper County	20.00
8-20	8001	Carl E. Hoffman, advertising Cass County	15.00
8-20	8002	P. G. Freeman, advertising Buchanan County	15.00
8-20	8003	H. H. Brimmer, advertising Jones County	10.00

8-20	8004	W. S. Barnard, advertising Clarke County	10.00
8-20	8005	W. M. Clark, advertising Marshall County.......	15.00
8-20	8006	C. K. Nelson, advertising Winnebago County	10.00
8-20	8007	Gus Strohmeier, advertising Sac County	15.00
8-20	8008	C. C. Ward, advertising Lucas County	15.00
8-20	8009	Geo. H. Hitchcock, advertising Johnson County..	10.00
8-20	8010	A. G. Smith, advertising Tama County	15.00
8-20	8011	Globe Ticket Co., roll tickets	225.44
8-20	8012	L. C. Hoffman, advertising Decatur County	12.00
8-20	8013	Capital City Hat Co., police hats	180.48
8-20	8014	C. E. Adamson, forage, hay	7.53
8-24	8015	Sherwood A. Clock, advertising Franklin County..	10.00
8-25	8016	A. Olson, laying shingles	34.81
8-25	8017	G. W. Fende, forage, oat straw	19.37
8-27	8018	R. E. Scovell, forage, oat straw	50.00
8-28	8019	Pain Pyrotechnic Co., payment No. 1, night show.	600.00
8-28	8020	T. M. Barnes Inc., payment on attractions........	637.50
8-30	8021	J. W. Richards, advertising Audubon County	12.00
8-30	8022	Pain Pyrotechnic Company, payment No. 2, night show	1,500.00
8-30	8023	Carl Christopherson, distributing bills	6.00
8-30	8024	F. J. Graber, ironing track	2.50
8-30	8025	Charles Griffith, ironing track	5.00
8-30	8026	Morrison Auto Co., ironing track	11.25
8-30	8027	E. Stanley, ironing track	5.00
8-30	8028	Geo. Norman, ironing track	2.50
8-30	8029	H. L. Cox, ironing track.........................	5.00
8-30	8030	Jno. E. Webb, sheep judge	50.00
8-30	8031	Earl Van Buskirk, ironing track	1.25
8-30	8032	C. C. Long, ironing track	1.25
8-31	8033	Edwin N. Wentworth, superintendent boys' judging contest	37.90
8-31	8034	T. G. Douglass, forage, hay	358.72
8-31	8035	W. S. Russell, poultry judge.....................	35.00
8-31	8036	F. W. Shellabarger, poultry judge	35.00
8-31	8037	Otto Kootz, ironing track	2.50
8-31	8038	W. H. Beattie, sheep judge	125.00
8-31	8039	M. W. Savage, first payment "Big Five"........	1,000.00
8-31	8040	D. A. Long, advertising Bremer County..........	15.00
8-31	8041	Means Auto Co., ironing track	7.50
9- 1	8042	McNall & Harter, forage department, hay	33.25
9- 1	8043	Walter Wilmot, ironing track	2.50
9- 1	8044	F. A. Miller, forage department, oat straw......	31.14
9- 1	8045	C. P. Beach, ironing track	3.75
9- 1	8046	Alex Robinson, forage department, hay	180.67
9- 1	8047	A. C. Hague, forage department, straw..........	27.54
9- 1	8048	Pain Pyrotechnic Co., third payment night show.	3,500.00
9- 1	8049	Pain Pyrotechnic Co., fourth payment night show	1,400.00

9- 1	8050	R. J. Thornberg, forage department, straw	16.15
9- 1	8051	J. Talley, forage department, straw	42.80
9- 2	8052	Fred Austin, ironing track	2.50
9- 2	8053	Centaur Wire & Iron Works, payment on construction of fence	200.00
9- 2	8054	M. G. Thornton, carrying banner night show	1.50
9- 2	8055	John C. Weber, first payment on band	500.00
9- 2	8056	John C. Weber, balance payment on band	1,700.00
9- 2	8057	M. E. Reed, payment for band	950.00
9- 2	8058	F. G. Odell, demonstration and lectures, "Bee Man"	100.00
9- 2	8059	M. W. Savage, balance on "Big Five Combination"	6,500.00
9- 2	8060	Pain Pyrotechnic Co., fifth payment, night show.	1,000.00
9- 2	8061	Pain Pyrotechnic Co., balance payment, night show	1,093.75
9- 2	8062	E. B. Cimijotti, trained horse act	750.00
9- 2	8063	Dan Davis, special detective, 1910	87.18
9- 2	8064	Cardua and Maud, vaudeville attraction (Barnes)	100.00
9- 2	8065	The Belfords, vaudeville attraction (Barnes)	575.00
9- 2	8066	Madami Bedini, vaudeville attraction (Barnes)	712.00
9- 2	8067	Carmon & Herbert, vaudeville attraction (Barnes)	125.00
9- 2	8068	SinClair-Johnston Trio, vaudeville attraction (independent)	185.00
9- 2	8069	J. W. Christina, Mgr., (Letter Carrier's Band) band 1910 fair	825.00
9- 2	8070	Harry Howard, vaudeville attraction	600.00
9- 2	8071	U. S. Mote, speiling night show, stock pavilion	3.00
9- 2	8072	S. E. Thornton, forage, wheat straw	45.30
9- 2	8073	O. A. Olson, freight on horses	50.64
9- 2	8074	R. S. Johnston, per diem and mileage August meeting	91.80
9- 2	8075	C. E. Cameron, per diem and mileage August meeting	98.00
9- 2	8076	W. C. Brown, per diem and mileage August meeting	194.20
9- 2	8077	C. W. Phillips, per diem and mileage August meeting	101.00
9- 2	8078	Elmer M. Reeves, per diem and mileage August meeting	88.30
9- 2	8079	E. J. Curtin, per diem and mileage August meeting	99.50
9- 2	8080	E. M. Wentworth, per diem and mileage August meeting	90.00
9- 2	8081	T. C. Legoe, per diem and mileage August meeting	79.70
9- 2	8082	C. F. Curtiss, per diem and mileage August meeting	79.70
9- 3	8083	John Ledgerwood, per diem and mileage August meeting	122.40
9- 3	8084	Chas. Escher, Jr., per diem and mileage August	

		meeting	90.00
9- 3	8085	O. A. Olson, per diem and mileage August meeting	99.50
9- 3	8086	H. L. Pike, per diem and mileage August meeting	100.00
9- 3	8087	J .C. Simpson, expense at state fair	24.00
9- 3	8088	G. S. Gilbertson, expense at state fair	24.00
9- 3	8089	John Ledgerwood, superintendent pay roll machinery department	361.00
9- 3	8090	W. C. Brown, superintendent pay roll privilege department	144.00
9- 3	8091	Chas. Escher, Jr., special committee work	18.00
9- 3	8092	W. C. Brown, superintendent pay roll, privilege, ticket takers	692.00
9- 5	8093	E. L. Hardin, special detective	85.00
9- 5	8094	Jno. McCune, police, September 3d and 4th	5.00
9- 5	8095	Iowa Trust & Savings Bank, bills payable and interest	10,279.83
9- 5	8096	G. S. Gilbertson, itemized bill	5.90
9- 5	8097	Iowa Trust & Savings Bank, uncollected check deposited speed department	10.00
9- 5	8098	C. P. Graham, orchestra 1910 fair	220.50
9- 5	8099	Frank Fountain, contract for scavenger work	130.00
9- 5	8100	C. G. Morrison, forage, clover hay	28.84
9- 5	8101	G. S. Burge, forage, tame hay	116.48
9- 5	8102	Albert Henry, forage, tame hay	99.39
9- 5	8103	Ed E. Byers, office boy	27.50
9- 5	8104	A. Olson, contract cleaning amphitheater	75.00
9- 5	8105	Geo. Tyler, forage department, hay	304.75
9- 5	8106	N. W. Murrow, forage department, hay	25.37
9- 5	8107	A. P. McAnalty, assistant superintendent grounds	110.44
9- 5	8108	Pearl Weaver, forage department, straw	278.13
9- 5	8109	Jas. H. Deemer, salary for August	83.33
9- 5	8110	C. C. Caldwell, garbage work	160.00
9- 5	8111	J. C. Simpson, extra services, member and clerk of executive committee	150.00
9- 6	8112	Elsie Colton, salary for August	100.00
9- 6	8113	A. R. Corey, salary for August	100.00
9- 7	8114	W. E. Clark, corn for mules	22.23
9- 7	8115	G. S. Gilbertson, refrigerator Club Dining Hall	50.00
9- 7	8116	Club Dining Hall, banquet State Day and extra meals	106.25
9- 7	8117	G. S. Gilbertson, treasurer, pay roll treasurer's department	1,482.50
9- 7	8118	C. W. Phillips, superintendent, pay roll ticket department	350.75
9- 7	8119	O. A. Olson, superintendent, pay roll admissions department	2,018.00
9- 7	8120	E. M. Wentworth, superintendent, pay roll police department	3,001.50

9- 7	8121	J. C. Simpson, secretary, pay roll press bureau department	107.25
9- 7	8122	J. C. Simpson, secretary, pay roll secretary's office	649.25
9- 7	8123	J. C. Simpson, secretary, pay roll forage department	479.00
9- 7	8124	J. C. Simpson, secretary, pay roll propertyman department	32.00
9- 7	8125	J. C. Simpson, secretary, Nos. 10, 11, 12, 17, 18, grounds department	2,878.57
9- 7	8126	E. M. Reeves, superintendent, pay roll horticultural department	79.35
9- 7	8127	Wesley Green, superintendent, pay roll floriculture department	75.00
9- 7	8128	C. E. Cameron, president, janitors, Administration building	307.25
9- 7	8129	C. F. Curtiss, superintendent, pay roll horse department	1,128.50
9- 7	8130	A. L. Denio, superintendent, pay roll speed department	664.15
9- 7	8131	H. L. Pike, superintendent, pay roll cattle department	617.65
9- 7	8132	R. S. Johnston, superintendent, pay roll swine department	514.75
9- 7	8133	Chas. Escher, Jr., superintendent, pay roll sheep and poultry department	176.00
9- 7	8134	E. J. Curtin, superintendent, pay roll agricultural department	278.00
9- 7	8135	W. B. Barney, superintendent, pay roll dairy department	138.75
9- 7	8136	T. C. Legoe, superintendent, pay roll fine arts department	465.80
9- 8	8137	Geo. W. Landers, 55th regiment band, 2 days	450.00
9- 8	8138	Capital City Cartage Co., drayage on school exhibit	2.00
9- 8	8139	Fred Woodward, horse and buggy, ticket department	24.25
9- 8	8140	J. I. Myerly, P. M., postage stamps	25.00
9- 8	8141	John Dorr, forage department, hay	559.55
9- 9	8142	W. B. Barney, services dairy department	48.00
9- 9	8143	W. O. Plummer, forage department, corn	69.85
9-12	8144	Neale S. Knowles, superintendent girl's contest	25.18
9-12	8145	Paul Storm, office boy S. E. offices	20.00
9-12	8146	C. H. Wegerslev, advertising Buena Vista County	30.00
9-12	8147	Chas. H. Gage, advertising Jefferson County	15.00
9-12	8148	C. F. Momyer, advertising Mahaska County	15.00
9-12	8149	P. A. Walters, advertising Black Hawk County	15.00
9-12	8150	E. B. Bravinder, advertising Humboldt County	15.00
9-12	8151	Mamie J. Boatwright, chaperone for girls	12.63
9-12	8152	John B. Castleman, expense on saddle horse, attraction	292.00

9-12	8153	Wm. Crownover, refund stall rent, horse department	8.00
9-12	8154	J. A. Loughridge, refund stall rent, horse department	2.00
9-12	8155	S. Metz & Sons, refund stall rent, horse department	4.00
9-12	8156	M. J. Nelson, refund stall rent, horse department.	2.00
9-12	8157	Mrs. Adam Sterling, refund stall rent, horse department	12.00
9-12	8158	W. A. Wickersham, refund stall rent, horse department	8.00
9-12	8159	Chas. E. Bunn, refund stall rent, horse department	12.00
9-12	8160	A. S. Burr, refund stall rent, horse department	2.00
9-12	8161	Loren Dunbar, refund stall rent, horse department	2.00
9-12	8162	Forbes Bros., refund stall rent, horse department.	8.00
9-12	8163	G. W. Grigsby, refund stall rent, horse department	4.00
9-12	8164	J. H. Kelly, refund stall rent, horse department...	1.00
9-12	8165	W. A. Helsell, refund stall rent, horse department.	4.00
9-12	8166	Glenwood Coal Co., coal for light plant..........	593.75
9-12	8167	Guiberson Costume Co., decorating buildings.....	290.00
9-12	8168	E. R. Harlan, expense account Home Coming Week	79.63
9-12	8169	Erwin Alber, one day in office and expense.......	2.15
9-12	8170	Shaw Bros., refund stall rent, and exhibitor's ticket	22.00
9-12	8171	Lozier Greenhouse Co., plants and shrubs	98.56
9-12	8172	J. C. Simpson, secretary, pay roll grounds department	744.20
9-12	8173	J. C. Simpson, secretary, expense to Minnesota State Fair	25.40
9-13	8174	Wm. P. Hepburn, expense speaker, Soldiers day...	13.90
9-13	8175	Potts Bros., balance cement floor grandstand......	1,890.81
9-13	8176	Potts Bros., stand northeast corner amphitheater.	79.98
9-13	8177	Ed Cree, 622 bushels oats, forage department......	223.92
9-13	8178	J. L. Moyer, storage hog crates	10.00
9-13	8179	J. L. Moyer, hauling cinders	87.40
9-14	8180	Weldon Williams & Lick, reserved seat tickets, amphitheater and stock pavilion	52.70
9-14	8181	Cattle department, account stall rent credited to poultry	8.00
9-15	8182	Pray & Comerford, plumbing contract	276.54
9-16	8183	Capital City Hay Commission Co., forage department, hay	336.18
9-16	8184	H. L. Pike, superintendent, balance pay roll cattle department	250.00
9-16	8185	Tablet Ticket Co., handy box letters	2.05
9-16	8186	C. Hennecke Co., park seats	175.00
9-16	8187	T. E. Grisell, advertising Guthrie County.........	12.00
9-16	8188	Forage department, hay and feed, admission and poultry departments	37.25

9-17	8189	The Midwestern Magazine, advertising 1910 fair	100.00
9-17	8190	Standard Oil Co., 2 cars road oil	439.59
9-17	8191	Gray Lithographing Co., 1,200 hangers	83.19
9-17	8192	R. P. Shuers, forage department, straw	74.39
9-17	8193	K. T. Loper, services Woman's Rest Cottage	22.50
9-19	8194	B. B. Welty, advertising Story county	25.00
9-22	8195	Geo. B. Grimes, supplies experiment department	4.40
9-24	8196	Shannon & Mott Co., mill feed, forage department.	1,061.51
9-24	8197	The Sherwin-Williams Co., 4 bbls. paint	177.75
9-24	8198	County Newspaper advertising, account advertising in country papers	2,620.95
9-26	8199	Mrs. Frank P. Carleton, matron Women's Rest Cottage	29.25
9-26	8200	Wesley Greene, planting flowers, etc	30.00
9-26	8201	J. C. Simpson, expense attending Interstate fair	26.60
9-26	8202	T. J. Hudson, advertising Madison county	15.00
9-26	8203	H. J. Kruse, advertising Benton County	12.00
9-26	8204	Jas. Nowak, advertising Poweshiek County	10.00
9-26	8205	C. W. Patti, firing boiler Administration building	25.00
9-26	8206	Jas. Kean, putting in pump plants	11.00
9-27	8207	L. M. Hawn, advertising Grundy County	20.00
9-27	8208	Burroughs Adding Machine Co., 1 adding machine	325.00
9-27	8209	W. C. Brown, expense Interstate fair and Minnesota state fair	78.60
9-29	8210	C. E. Cameron, expense attending Minnesota state fair	29.70
9-29	8211	Wm. F. Volz, refund coop rent	2.00
9-30	8212	J. C. Simpson, extra service, member and clerk executive committee	150.00
9-30	8213	A. R. Corey, salary September	125.00
9-30	8214	Elsie Colton, salary September	100.00
9-30	8215	Jas. H. Deemer, salary September	83.33
9-30	8216	C. E. Cameron, per diem and mileage	34.00
9-30	8217	W. C. Brown, per diem and mileage	30.20
9-30	8218	R. S. Johnston, per diem and mileage	22.80
9-30	8219	C. W. Phillips, per diem and mileage	33.00
9-30	8218	R. S. Johnston, per diem and mileage	27.80
9-30	8221	E. M. Wentworth, per diem and mileage	18.00
9-30	8222	T. C. Legoe, per diem and mileage	20.50
9-30	8223	C. F. Curtiss, per diem and mileage	15.70
9-30	8224	Jno. Ledgerwood, per diem and mileage	18.40
9-30	8225	O. A. Olson, per diem and mileage	27.50
9-30	8226	C. W. Phillips, June meeting auditing committee	33.00
9-30	8227	T. C. Legoe, expense bills	2.86
9-30	8228	A. J. Hunter, advertising Calhoun County	10.00
9-30	8229	Buck Bros. Co., picture frames	56.88
9-30	8230	Ben Weise, hauling cinders	18.20

9-30	8231	Des Moines Bridge & Iron Works, constructing judges stand, amphitheater and agricultural building	348.90
9-30	8232	Ferguson Printing Co., printing	164.50
9-30	8233	L. F. Hall, advertising Ringgold County	12.00
9-30	8234	O. C. Simonds, first payment ground plans	2,000.00
9-30	8235	Iowa Trust & Savings Bank, refund on day admissions	9.00
9-30	8236	Ora Williams, services chief publicity bureau	520.00
9-30	8237	American Trotting Ass'n, annual dues	100.00
9-30	8238	American Press Ass'n, plates for county papers	527.50
9-30	8239	Altoona Herald, receipts for Legoe	1.75
9-30	8240	Adams Express Co., June, July and August bills	28.40
9-30	8241	American Express Co., June, July, August and September bills	32.09
9-30	8242	Baker Trisler Co., office supplies	97.55
9-30	8243	Bishard Bros., printing list speed entries	19.00
9-30	8244	Breeders Gazette, The, display advertising	176.40
9-30	8245	D. M. Boydston, refund coop rent	1.00
9-30	8246	Bankers Cabinet Supply Co., signs for school exhibits	1.75
9-30	8247	F. Brody & Sons, refund day admissions	1.00
9-30	8248	W. H. Brereton, 1 M. brick, flue, Administration building	7.50
9-30	8249	Backman Sheet Metal Works, sheet metal work, miscellaneous	366.96
9-30	8250	A. H. Corning, supplies	2.40
9-30	8251	Chase & West, 1 Monarch range	155.00
9-30	8252	Capital City Printing Plate Company, date lines and electros	36.75
9-30	8253	The Chamberlain Hotel, Castleman and Wells bills	92.70
9-30	8254	Central Iron Works, contract work on grandstand	363.50
9-30	8255	Des Moines Daily News, display advertising	277.20
9-30	8256	Downing Electric Co., electric supplies	321.46
9-30	8257	Dodd & Struthers, 320 face brick	6.08
9-30	8258	Des Moines Rubber Stamp Works, rubber stamps	3.65
9-30	8259	Des Moines Trunk Factory, bags for ticket sellers, treasurer's department	11.50
9-30	8260	Des Moines Daily Capital, subscription February 1, 1909, to August 1, 1910	4.50
9-30	8261	Des Moines Capital, display advertising	268.38
9-30	8262	Des Moines Water Co., June, July, August, September bills	366.43
9-30	8263	G. W. Dietz, cement	129.90
9-30	8264	Farm Sense, display advertising	15.00
9-30	8265	Farmers Tribune, display advertising	75.00
9-30	8266	Guarantee Electric Co., rental generators	68.00
9-30	8267	Globe Coal Company, 3,050 pounds O. C. coal	10.29

9-30	8268	Goodwin Tile & Brick Co., 200 4-inch tile, game exhibit	3.60
9-30	8269	Greene Foundry & Furnace Works, chair legs, meter range, etc.	29.70
9-30	8270	Globe Machinery & Supply Company, supplies and machinist	554.61
9-30	8271	Hawkeye Transfer Co., mower and plow	67.50
9-30	8272	R. A. Hart, refund exhibitor's ticket	2.00
9-30	8273	The Horseman, advertising racing program	56.50
9-30	8274	Harris-Emery Co., bunting exposition building, fair 1909	8.33
9-30	8275	The Hulsizer Co., decorating school exhibit booth.	18.10
9-30	8276	Horse Review, advertising speed program	164.02
9-30	8277	Fred Hethershaw, expense educational exhibit, farm crops	1,338.98
9-30	8278	Fred Hethershaw, expense independent farm exhibit	146.51
9-30	8279	The Homestead Co., display advertising	250.00
9-30	8280	The Homestead Co., printing miscellaneous	305.00
9-30	8281	Iowa Seed Company, plants and flowers	48.75
9-30	8282	Iowa Lithographing Co., expense and premium warrants	32.50
9-30	8283	International Harvester Company, repairs	2.05
9-30	8284	Iowa Telephone Co., 'phone rent and toll bills	17.00
9-30	8285	Iowa Pipe & Tile Co., sewer pipe and drain tile	57.35
9-30	8286	Jewett Lumber Co., 8 bbls. of lime	6.00
9-30	8287	Koch Bros. Ptg. Co., office supplies	57.35
9-30	8288	Kimballs Dairy Farmer, display advertising	106.40
9-30	8289	Chas. Koenigsberger, harness supplies	6.70
9-30	8290	Lewis-Wallace Printing Co., printing	42.95
9-30	8291	Lewis & Kitchen, repairs for closet	60.00
9-30	8292	Langan Bros. Co., supplies	210.91
9-30	9293	Merchants Laundry, laundry work	4.68
9-30	8294	Mutual Telephone Co., 'phone rental and toll bills.	9.30
9-30	8295	Musgrave Fence Co., gate hinges & labor	5.50
9-30	8296	D. E. Moon Ptg. Co., printing	30.75
9-30	8297	Matthews Carriage Co., repair work	47.60
9-30	8298	McDonald Boiler & Iron Works, repair work	2.60
9-30	8299	Miller Clean Towel Supply, towel supply for Administration building	30.25
9-30	8300	Herman Motzer, rental cash register, forage department	5.00
9-30	8301	Merchants Transfer & Storage Co., freight and drayage	73.58
9-30	8302	O'Dea Hardware Co., hardware supplies	544.28
9-30	8303	Tom Oxenfield, refund coop rent	1.00
9-30	8304	Pratt-Mendsen Paper Co., paper and twine for advertising	8.47

9-30	8305	Pinkerton's National Detective Agency, special detectives 1910	197.00
9-30	8306	J. H. Queal & Co., lumber bill	2,393.31
9-30	8307	Remington Typewriter Company, one ribbon	.75
9-30	8308	Register & Leader, job printing	16.75
9-30	8309	Register & Leader, engraving department	48.60
9-30	8310	Register & Leader, display advertising	375.60
9-30	8311	Geo. E. Rees, horse shoeing	14.50
9-30	8312	E. I. Sargent, forage department, straw	18.85
9-30	8313	Scott Drug Co., drugs Woman's Rest Cottage	7.85
9-30	8314	Star Engraving Co., one zinc etching	.84
9-30	8315	Spirit of the West, advertising speed program	68.50
9-30	8316	Willis Sweeney, forage department, tame hay	66.90
9-30	8317	Paul Storm, balance due (office boy)	4.30
9-30	8318	Standard Oil Co., gasoline and oil	37.51
9-30	8319	Pease Hay Commission Co., forage department, straw	187.91
9-30	8320	Successful Farming, printing official program	393.75
9-30	8321	W. J. Sievers, posting ticket book two days	6.00
9-30	8322	Standard Glass and Paint Co., paint, oil and brushes	352.01
9-30	8323	Sieck Tent & Awning Company, rental of tents, etc.	264.05
9-30	8324	Frank C. Tate, map, blue prints of grounds	6.00
9-30	8325	C. H. Turk, commission on advertising in premium list	70.65
9-30	8326	Underwood Typewriter Company, rental two machines	2.00
9-30	8327	Universal Traction Co., crating burned by gateman	1.50
9-30	8328	U. S. Express Co., June, July, August bills	34.37
9-30	8329	The Western Horseman, advertising speed program	93.50
9-30	8330	The Warren Mfg. Co., feed racks, horse barns	100.00
9-30	8331	J. S. Wilson Floral Co., plants and shrubs	129.50
9-30	8332	Western Newspaper Union, 8 reams white paper	17.92
9-30	8333	Western Poultry Journal, display advertising	11.20
9-30	8334	J. H. Welch Ptg. Co., printing	137.50
9-30	8335	Ben Woolgar, horse shoeing	12.00
9-30	8336	Western Union Telegraph Co., June, July, August bills	65.10
9-30	8337	Wells Fargo Express Co., July and August bills	21.94
9-30	8338	Wallaces Farmer, display advertising	250.00
9-30	8339	Wallaces Farmer, job printing	497.30
9-30	8340	Younker Bros., supplies	43.08
9-30	8341	Ferguson Ptg. Co., balance on printing	6.40
9-30	8342	Iowa State College of Agriculture and Mechanic Arts, one-half expense college exhibit	425.43
9-30	8343	W. W. Moore, bill posting	536.46
9-30	8344	Purcell Printing Co., printing premium list	979.00

9-30	8345	Hawkeye Press Clipping Bureau, press clippings August and September	8.00
9-30	8346	R. V. Lucas, advertising Boone County	15.00
9-30	8347	Joe McCoy, advertising Warren County	10.00
9-30	8348	J. P. Mullen, advertising Pocahontas County	10.00
9-30	8349	F. B. Rogers, advertising Hancock County	12.00
9-30	8350	Carl Shields, advertising Union County	15.00
9-30	8351	W. C. Treloar, advertising Boone County	15.00
9-30	8352	Walter R. Wilmot, refund rental, auto show privilege	208.92
10-11	8353	John Leitch, refund stall rent, horse department	44.00
10-11	8354	Bastian Bros. Co., premium ribbons and badges	623.15
10-12	8355	Amy Ellis, services for Harlan	39.25
10-14	8356	Elsie Colton, one-half months' salary	50.00
10-14	8357	J. I. Myerly, P. M., postage stamps	20.00
10-14	8358	W. C. Brown, expense Illinois and Missouri State Fair	47.07
10-14	8359	J. C. Simpson, expense Illinois and Missouri State Fairs	43.12
10-14	8360	A. V. Storm, Supt., pay roll school department	221.54
10-14	8361	J. C. Simpson, expense Iowa dairy show and American Royal	31.20
10-17	8362	Des Moines Tent and Awning Co., rental tents, etc.	301.45
10-17	8363	C. E. Cameron, expense Iowa dairy show and American Royal	36.95
10-17	8364	C. E. Cameron, meeting Executive committee	22.00
10-17	8365	W. C. Brown, meeting Executive committee	18.20
10-17	8366	Bastian Bros. Co., balance on premium ribbons	9.00
10-21	8367	Potts Bros., cement work amphitheater	274.48
10-24	8368	American Association of Fairs & Expositions, annual dues	25.00
10-26	8369	Western Union Teleg. Company, messages from Ames	3.15
10-27	8370	S. Davidson Bros., furnishings Administration Building	16.75
10-27	8371	Geo. A. Miller Printing Co., balance on printing tickets	203.45
10-27	8372	County newspaper advertising account, advertising in country papers	146.07
10-31	8373	J. C. Simpson, extra services member and clerk executive committee	150.00
10-31	8374	A. R. Corey, salary for October	125.00
10-31	8375	Elsie Colton, balance salary for October	50.00
10-31	8376	Jas. H. Deemer, salary for October	83.33
10-31	8377	E. D. Roberts, refund exhibitor's ticket	2.00
10-31	8378	The Art Sign Shop, signs for school exhibit	5.60
10-31	8379	O'Donnell Ptg. Co., printing Treasurer's dept	3.25
10-31	8380	The Chicago Live Stock World, subscription to Live Stock World	3.00

10-31	8381	Bilz Sign Co., signs for seat sales	2.50
10-31	8382	J. C. Simpson, Secretary, pay roll Grounds Dept.	187.82
10-31	8383	J. C. Simpson, Secretary, pay roll Grounds Dept.	163.37
10-31	8384	J. H. Deemer, freight bill	2.06
10-31	8385	Geo. T. Saum, refund pen rent	1.00
10-31	8386	Stoner Wall Paper Co., signs, etc	52.03
10-31	8387	W. T. Roberts, refund stall rent, horse dept.	10.00
10-31	8388	E. M. Reeves, special committee work	31.10
10-31	8389	Fuller Johnson Mfg. Co., share rental machinery building	37.50
10-31	8390	Iowa State College Agricultural and Mechanic Arts, one-half expense college exhibit	180.36
10-31	8391	Purcell Printing Co., balance printing premium list	48.00
10-31	8392	Centaur Wire & Iron Works, balance track fence.	76.10
11-15	8393	W. M. Clark, Sec-Treas., dues County District Fair Association	4.00
11-15	8394	Robt. F. Hildebrand, photos 1910 fair	65.00
11-15	8395	J. C. Simpson, expense of visiting Illinois and Michigan and Indiana state fair	60.60
11-15	8396	Adams Express Co., September bills	1.05
11-15	8397	American Express Co., October bills	1.25
11-15	8398	Baker-Trisler Co., 1 bottle ink eraser	.25
11-15	8399	Ballard & Elliott Co., insurance premiums	460.50
11-15	8400	Jno. T. Christie Co., insurance premiums	367.37
11-15	8401	Des Moines Water Co., October water bill	22.29
11-15	8402	Grand Department Store, supplies school exhibit.	11.17
11-15	8403	Mt. Vernon Record, adv. country press	4.60
11-15	8404	McCutcheon & Verran, insurance premiums	190.26
11-15	8405	Iowa Telephone Co., 'phone rental and toll bills	7.15
11-15	8406	Iowa Seed Co., grass seed	19.00
11-15	8407	U. S. Express Co., September bills	.25
11-15	8408	Wilcox, Howell & Hopkins, insurance premiums.	732.73
11-15	8409	Witmer & Kauffman, insurance premiums	401.51
11-15	8410	Wells Fargo & Co., express, October bills	2.38
11-15	8411	Western Union Telegraph Co., September and October bills	7.91
11-15	8412	G. S. Gilbertson, treasurer's salary	100.00
11-15	8413	C. E. Cameron, expense visiting Illinois, Indiana and Michigan fairs	59.13
11-15	8414	W. H. Brereton, 8,000 brick, amphitheater	60.00
11-26	8415	Mutual Telephone Co., toll bill	.25
11-26	8416	Ben Woolgar, horse shoeing	10.00
11-26	8417	J. C. Simpson, Secretary, pay roll No. 22, Grounds Dept.	103.00
11-26	8418	Country Newspaper Advertising Acct., adv. country press	4.41
11-30	8419	Jas. H. Deemer, salary for November	83.37
11-30	8420	J. C. Simpson, extra services member and clerk executive committee	150.00

11-30	8421	A. R. Corey, salary for November	125.00
11-30	8422	Elsie Colton, one-half month's salary	50.00
		Total	$119,614.92

ITEMIZED STATEMENT OF ACCOUNT.

RECEIPTS AND DISBURSEMENTS, IOWA DEPARTMENT OF AGRICULTURE, FOR THE FISCAL YEAR ENDING NOV. 30, 1910.

RECEIPTS.

To cash balance Dec. 1, 1909		$ 4,985.25
To receipts from sources other than Fair—		
From fees, Division of Horse Breeding	$ 1,271.50	
From collections from Fair Grounds, rentals, etc.	2,121.53	
From bills payable	10,000.00	
From State Auditor's warrant for insurance	1,000.00	
From interest	117.97	
From miscellaneous sources	147.30	14,658.30
By receipts 1910 Iowa State Fair—		
From sale of light and power	$ 388.25	
From sale of forage	5,616.92	
From sale of concessions, Privilege Dept.	21,422.03	
For entry fees, races	5,907.15	
From stall rents, Horse Dept.	1,702.00	
From stall rents, Cattle Dept.	898.00	
From pen rents, Swine Dept.	908.00	
From pen rents, Sheep Dept.	243.00	
From coop rent and sale of space, Poultry Dept.	658.00	
From rental floor space, Mach. and Imp. Dept.	3,071.92	
From sale of space, Agricultural Bldg.	665.00	
From sale of space and ice cream, Dairy Dept.	823.55	
From sale of space, Horticultural Dept.	140.00	
From sale of space, Exposition Building	2,575.00	
From collection of fines, Public Safety Dept.	6.65	
From sale of exhibitors' tickets	2,398.00	
By cash received from various breeding associations for premiums	4,212.91	
By ticket sales	104,584.00	
By advertising in premium list	661.00	
By advertising in official program	282.50	
By miscellaneous sources	95.89	157,259.77
To total receipts		$176,903.32

DISBURSEMENTS.

Expense other than Fair—		
Fair ground maintenance	$ 1,465.86	
Insurance premiums	2,152.37	
Expense account of 1909 Fair	334.79	
Miscellaneous expense	182.41	
Adding machine	325.00	
Bills payable	10,000.00	
Interest	279.83	14,740.26
Improvements and repairs:		
Amphitheater	$ 8,070.06	
Horse barns	3,638.20	
New speed barn	1,018.39	
Permanent ground plans	2,245.40	
Miscellaneous painting	1,072.91	
Light and power plant improvements	364.13	
Street improvements	1,312.09	
Walks and curbing	364.74	
Tools and implements	244.84	
Agricultural building improvements	265.59	
Cattle barn improvements	472.54	
Race track fence and improvements	180.60	
Administration building improvements (kitchen and flue)	142.73	
Swine pavilion improvements	38.15	
Grading and seeding centerfield, paddock and aruond amphitheater	319.78	
Closet improvements	406.37	
Miscellaneous grading	356.75	
Capitol Avenue closet (new)	274.70	
Band stand and dressing room (amphitheater)	330.26	
Telephone exchange improvements, 1909	298.23	
Water distribution system improvements	208.25	
Speed barn improvements	209.23	
Park seats (100)	223.72	
Drinking fountains (4)	283.21	
Rest cottage (closet)	225.03	
Judges' stand	267.10	
Stock pavilion improvements	64.70	
Furnishings, Administration Building	330.57	
Garbage cans	148.50	
Miscellaneous improvements	984.21	24.360.98
Expense of 1910 Fair—		
Educational exhibit of farm crops	$ 1,377.73	
Executive committee meetings	485.40	
Special committee meetings	998.62	

Express, telegraph and telephone	362.40
Postage	700.00
Printing, miscellaneous	2,012.63
Printing tickets	749.04
Advertising	9,985.19
Music and attractions	25,520.25
Light and power	1,641.65
Water	315.73
Supplies and stationery	314.41
Forage	5,404.54
Salaries and clerical hire	4,265.00
Board meetings	707.80
President's department	435.50
Secretary's department	681.40
Treasurer's department	1,682.95
Concession and Privilege department	1,164.10
Speed department	686.15
Horse department	1,230.50
Cattle department	1,027.05
Swine department	614.55
Sheep department	295.00
Poultry department	253.00
Implement and machinery department	742.72
Agricultural department	382.50
Dairy department	186.75
Horticultural department	170.15
Floricultural department	77.50
Fine art department	588.81
School exhibits department	268.86
Admissions department	2,253.39
Transportation and public safety department	3,655.46
Ticket auditing department	482.00
Closet and scavenger work	648.40
Plants and flowers	492.18
Freight and drayage	36.75
Boys and girls contest	75.71
Rest cottage	59.60
Individual farm exhibit	55.53
One-half expense of college exhibit	605.79
Expense E. R. Harlan account of Home Coming week	131.28
Premium ribbons and badges	632.15
Grounds Department.	
Assistants and foremen	139.31
Track work	396.42
Street work	89.75
Miscellaneous work cleaning ground, etc., prior fair	2,045.60

Miscellaneous work during fair		1,437.68	
"Shadow of the cross" booth		35.50	
Horse show ring		40.00	
Water supply system		164.53	
Miscellaneous expense account of fair		853.27	
Rental of tents, chairs, etc		565.50	
Decorations and flags		290.00	
Expense of fair other than premiums		$ 80,513.68	
Premiums paid—			
On horses	$10,381.00		
On cattle	11,778.00		
On swine	4,135.00		
On sheep	2,146.00		
On poultry	1,036.00		
On agricultural products	3,074.00		
On pantry and apiary products	798.00		
On fruit	892.00		
On creamery and dairy butter	602.00		
On plants and flowers	945.00		
On art and needle work	1,753.00		
On school exhibits	422.00		
On scholarships	1,000.00		
On speed premiums	10,755.00		
Total premiums paid		49,717.50	130,231.18
To cash balance in treasury Dec. 1, 1910			7,482.09
To credit for year account unpaid warrants			88.81
To balance account			$176,903.32

GENERAL SUMMARY.

CREDIT AND DEBIT ACCOUNT.

To credit cash balance Nov. 30, 1910			$ 7,482.09
To debit by unpaid expense warrants—			
Issued prior to Dec. 1, 1909	$ 16.00		
Issued since Dec. 1, 1909	9.65	25.65	
To debit by unpaid premium warrants—			
Issued prior to Dec. 1, 1909	$ 15.50		
Issued since Dec. 1, 1909	157.50	173.00	
To debit by unpaid warrants		$ 198.65	
To debit by unpaid balances due on contracts for Fair Grounds improvements—			
Due to Des Moines Bridge & Iron Works on amphitheater contract	1,157.47		
Due to O. C. Simmonds on landscape work	1,000.00	2,157.47	2,356.12
Net balance			$ 5,125.97

SUMMARY RECEIPTS AND DISBURSEMENTS.

IOWA STATE FAIR AND EXPOSITION, 1910.

To total receipts		$157,259.77
To total disbursements	$130,231.18	
To net profit	27,028.59	157,259.77

Mr. G. S. Gilbertson, Treasurer of the State Department of Agriculture, made the following report:

REPORT OF TREASURER.

G. S. GILBERTSON.

To the Directors of the Iowa State Board of Agriculture—

Gentlemen: I present herewith report of Receipts and Disbursements for year ending November 30, 1910, as follows:

RECEIPTS.

Balance on hand Nov. 30, 1909		$ 4,985.25
Received from gate receipts, day general adm.	$ 72,608.00	
Received from gate receipts, evening general adm.	2,067.75	
Received from amphitheater—Day admissions	6,553.50	
Day box seats	1,031.25	
Day reserved seats	5,121.00	
Evening admissions	6,254.50	
Evening box seats	800.25	
Evening reserved seats	4,130.50	
Received from quarter stretch tickets	320.25	
Received from campers' tickets	2,272.00	
Received from live stock pavilion tickets	3,425.00	104,584.00
Received from Supt. of Police dept.	$ 6.65	
Received from Supt. Hort. and Agricultural depts.	805.00	
Received from Supt. Swine dept.	908.00	
Received from Supt. Sheep and Poultry dept.	901.00	
Received from Supt. Horse dept.	1,702.00	
Received from Supt. Fine Arts dept.	2,575.00	
Received from Supt. Dairy dept.	823.55	
Received from Supt. Grounds	2,131.53	
Received from Supt. Light and Power	388.25	
Received from Supt. Cattle dept.	898.00	
Received from Supt. Machinery dept.	3,071.92	
Received from Supt. Privileges	21,422.03	35,632.93
Received from Secretary—Exhibitor's tickets	$ 2,398.00	
Advertising	866.00	
Forage	5,616.92	
Speed	5,907.15	

Association special premiums	4,212.91	
Division of horse breeding	1,271.50	
Interest	117.97	
Miscellaneous	1,310.69	
Loan	10,000.00	31,701.14
Total		$176,903.32

DISBURSEMENTS.

Paid expense warrants	$119,649.99	
Paid premium warrants	49,771.24	169,421.23
Balance of cash on hand Nov. 30, 1910		7,482.09
Total		$176,903.32

Respectfully submitted this 14th day of December, 1910.

G. S. GILBERTSON, Treasurer.

Iowa State Board of Agriculture.

Gentlemen—This is to certify that on November 30, 1910, there was on deposit in the Iowa Trust & Savings bank to account of G. S. Gilbertson, Treasurer of the Iowa Department of Agriculture, the sum of seven thousand four hundred eighty-two dollars and nine cents ($7,482.09).

A. O. HAUGE, Cashier.

CONDENSED FINANCIAL STATEMENT OF THE STATE DEPARTMENT

1907, 1908.

Showing Receipts and Disbursements of Iowa State Fair and Other Sources and

Net Profit of Fair for Each

Year	Receipts							
	Cash balance beginning of year	In reserve fund	From state fair	From state appropriation	From other sources	Total receipts for year	Grand total	Premiums paid
1896	$ 116.79	------------	$ 36,622.10	$ 7,000.00	$ 6,710.22	$ 50,332.32	$ 50,449.11	$ 16,404.29
1901	28,616.55	------------	50,712.91	1,000.00	2,753.82	54,466.73	83,083.28	19,203.83
1902	34,244.93	$ 12,000.00	63,084.71	38,000.00	3,037.06	104,121.77	138,366.70	21,736.31
1903	30,372.25	15,000.00	59,838.56	1,000.00	3,140.79	63,979.35	94,351.60	23,813.13
1904	28,963.11	15,000.00	66,100.36	48,000.00	2,622.03	116,722.39	145,685.50	24,691.68
1905	29,657.23	15,000.00	84,786.25	1,000.00	2,840.92	88,627.17	118,284.49	28,730.89
1906	39,976.34	15,000.00	110,929.85	1,000.00	3,717.16	115,647.01	155,623.35	31,703.94
1907	50,294.87	15,000.00	104,356.75	76,000.00	5,452.34	185,809.09	236,103.96	35,504.79
1908	35,327.90	15,000.00	138,764.66	1,000.00	3,262.95	143,027.61	178,355.51	38,744.56
1909	25,328.73	15,000.00	137,307.40	101,000.00	5,257.42	243,564.82	268,893.55	42,262.76
1910	4,985.25	------------	157,259.77	------------	14,658.30	171,918.07	176,903.32	49,717.50

F AGRICULTURE FOR YEARS OF 1896, 1901, 1902, 1903, 1904, 1905, 1906, 09, 1910.

xpenditures, Together with Amount Expended for Improvements, Repairs, etc., and the Years Named.

Disbursements							Profits of Fair		
Other fair expenses	Improvements and repairs	Disbursements other than for fair	Total for year	Cash on hand	Previous year's business or outstanding warrants	Grand total	Total receipts of fair	Total expenses of fair	Net profits
5,351.06	$ 7,471.95	$14,019.88	$ 53,247.28	$ 152.84	------------	$ 53,400.12	$ 36,622.10	$ 31,807.35	$ 4,814.75
3,925.87	13,378.73	2,313.44	48,821.87	34,244.93	$ 16.48	83,083.28	50,712.91	33,129.70	17,583.21
0,073.34	63,457.12	2,608.60	107,875.46	30,372.25	118.99	138,366.70	63,034.71	41,809.65	21,275.06
1,989.56	17,855.77	1,704.83	65,363.29	28,963.11	25.20	94,351.60	59,838.56	45,802.69	14,035.87
8,485.42	59,641.11	3,195.43	116,013.64	29,657.23	14.63	145,685.50	66,100.36	53,177.10	12,823.26
4,408.62	11,963.09	3,345.27	78,447.87	39,976.34	139.81	118,284.40	84,786.25	63,139.51	21,646.74
0,315.60	30,035.33	3,385.87	105,440.74	50,294.87	112.26	155,623.35	110,929.85	72,459.39	38,470.46
3,647.20	16,459.05	5,043.03	200,654.07	35,327.90	176.19	236,103.96	104,356.75	79,151.99	25,204.76
5,848.65	53,663.69	4,975.50	153,231.98	25,328.73	381.39	178,355.51	138,764.66	94,593.21	44,171.45
6,963.12	150,208.58	4,379.91	263,814.37	4,985.25	332.39	268,893.55	137,307.40	109,225.88	28,081.52
0,513.68	24,360.98	14,740.26	169,332.42	7,283.44	287.46	176,903.32	157,259.77	130,231.18	27,028.59

Following the Secretary's report, Professor C. F. Curtiss of Ames addressed the convention on "The Rural Education Problem."

THE RURAL EDUCATION PROBLEM.

PROF. C. F. CURTISS, AMES, IOWA.

The problem of more directly relating the public school sysetm to the work and life of the people is the foremost educational problem of the present day. There is a well-nigh universal sentiment in favor of redirecting our secondary school education. This is particularly true of the rural schools, where conditions are such that it is impossible to maintain instruction of satisfactory kind and grade in a large number of districts. We have not yet reached the stage of abandoned farms in Iowa, but we have reached the stage of abandoned rural schools. We have a great number of rural schools that ought to be abandoned for some better system. We have over 2,000 schools with an enrollment of ten pupils or less, many of them with not over five, and we have over 850 schools with an enrollment of six or less.

We have 12,640 rural schools in Iowa. Superintendent Riggs reports that the school population in these rural schools has decreased 13,735 in three years. The total school enrollment in the public schools of Iowa has decreased 55,562 during the past ten years. This is not a gratifying showing for a state that has prided itself in its educational standards.

The rural school problem is a vital problem from an educational standpoint, and more than that, it has a vital relation to the rural life problem about which there is so much concern, now that the state is actually losing population. The rural life problem will not be solved until we find a measurably satisfactory solution for the rural school, rural church and good roads problems. It is not primarily a question of profits, or increased production from the farms of the state. The prosperity that has prevailed in recent years has hastened rural depopulation and led to abandoned rural schools. Rural depopulation will continue in Iowa as long as the educational and social conditions of the farm community are unsatisfactory. The greater the farmer's accumulation of profits the sooner he feels able to avail himself of the advantages afforded by the city schools, and the imaginary comforts of a life of leisurely retirement. The whole field of agriculture is being projected on a higher plane. The farmer has a broader outlook and higher standards—higher standards of life as well as of agriculture. He seeks for his children as good an education as any schools afford. The rural schools are not being abandoned because the rural pupils are out of school. It is because they are in school somewhere else. The rural school no longer serves its purpose. Each fall about 3,000 new teachers enter the rural schools. They are in the main inexperienced, untrained, and out of sympathy with country life and the country atmosphere. Those that develop real teaching ability and fitness for their work soon obtain positions in graded schools and other inexperienced teachers take their places.

I have the greatest admiration and respect for such county superintendents as Miss Field and Mr. Benson, who, by their enthusiasm and well directed efforts have inspired many of their teachers to put new life and a new meaning into their work by connecting it with the farm and the things about them in nature. But even the best of superintendents and teachers can make but little progress under a system that is weak and growing weaker from year to year. I refer to the present sub-district system under which a majority of the rural schools of Iowa are organized. We may as well face the fact squarely, that no matter how well the old plan may have served in the past, and regardless of how strongly we may be attached to the local control policy, the sub-district unit, no longer meets the requirements of our modern educational needs. In one county in Iowa having 125 sub-districts, 37 of them held no annual elections last March. This indifference alone is fatal to efficient organization even if there were no other barriers in the way. The sub-district plan must give way to a larger unit, of not less than a township, where weak schools may be abandoned and others consolidated when desired. General consolidation may not come about rapidly, but the township or county unit plan would permit this to be accomplished as fast as circumstances warranted and would leave it at the option of the people concerned.

The consolidated school is able to provide for the introduction of agriculture and household economics on a satisfactory and efficient basis, and such schools can have the service of specially trained teachers. A school of that kind can be made a center of social life and community interest in a way that can never be reached by a one-room, six-to-ten-pupil school. It can do the work that it undertakes to do as efficiently as any of the graded schools of the cities, and in addition it can have it gardens and its laboratories, and access to the fields and live stock, and other means of connecting up the school work with the life and problems of the country.

The city school is not necessarily better than the rural school. The rural school has been a strong force in the creation of sturdy manhood and womanhood and good citizenship. It is one of the institutions that we have been proud of. It needs only to be reorganized and redirected to make it a greater factor than it has ever been.

There is also an urgent need for a country high school, or more properly, an industrial high school. This may not of necessity be located in the country, though for many reasons it would be desirable to have it located there. Here again we may as well face the unpleasant fact that the average high school has not served its purpose in the sense of meeting present day demands. It has not only tended to direct the country boy away from industrial life, but it has lost its grip on the city boy to such an extent that graduating classes are often made up mainly of girls. The city high school has not afforded a satisfactory connecting link between the rural school and the college. Some form of country high school must be evolved. It must serve the needs of the country boy and girl. It must fit them for college if they want a college education, and it must train them for the farm, the shop, and the home, and for useful and honorable citizenship, if their education ends with the high school.

The city high school needs are not materially different. Eventually they will be put upon the same basis. Some city high schools will come immediately to this standard by providing specially trained teachers and fields and laboratories, and grain and stock and all necessary facilities for making the work useful, practical and scientific; and some will merely make provision for a little more general science and call it agricultural or industrial training. Such schools will continue to lose pupils.

Our government has no greater problem than that of providing the right kind of education for its people. President Roosevelt said, "It is a reproach to us as a nation that we have permitted our training to lead children away from the farm and the shop instead of toward them." A representative of the German government said, in addressing a meeting of American educators a few weeks ago, "Every farmer's boy in Germany, whether rich or poor, and every hired man has the opportunity of studying in the public schools the principles underlying the successful practice of agriculture and the trades and industries." The investigations of Germany's trained scientific men, coupled with the national policy of vocational education in the public schools, has given to that country the foremost place among the industrial nations of the world. It is not the competition of ignorant labor that the American farmer or manufacturer need fear. It is the competition of the intelligent laborer and the educated farmer and mechanic in foreign countries that will be hardest to meet.

We have come to a period when vocational education must have a permanent place in our public school system. It is essential to the training of the farm boy and it will be of equal benefit to the city boy. It is not necessary that the country and city schools be differentiated. The essential thing is, that the work of the schools be properly directed to meet the modern needs of both communities. It would be better that some of these vocational schools be established in the country, for two reasons: First, they will find there the right environment and the right purpose and spirit for successful work; and, second, the country sentiment and interest will center about such a school and it will more strongly attach country people to the farm instead of taking them away from the farm, as is the tendency where the country is dependent upon the city for schools. The contention on the part of some educators that the city schools can furnish all the vocational education required is a short-sighted policy and an educational fallacy. The proper place for the country school is in the country and it ought to be made so efficient that there will be no need of the pupil leaving the country until he is ready for higher grade work than the country school offers. There is no cause for alarm over the proposal to establish a few special agricultural high schools in the country for the country needs. These schools will help to work out the vocational education problem more rapidly and more efficiently than it can be done without them. They will help to train teachers for the vocational work in the smaller schools. The county agricultural high school has been tried out with good results in Wisconsin for a period of five or six years. In Minnesota, the policy of state aid to consolidated rural schools, and to special high schools for maintaining agricultural instruction, is strongly endorsed. In Nebraska and in several other states, state aid is given to certain high schools for maintaining instruction especially adapted for the training of teachers for the rural schools.

A bill providing liberal federal aid for vocational education is now pending in congress and was favorably reported by the agricultural committee of the senate at the last session. There may be a difference of opinion about some of the details of that bill, but there can be no question but that federal aid in establishing vocational schools and providing for agricultural extension work, would be of incalculable value, and it would lead to immediate action, systematic effort, and co-operation in extending the work in all the states. This measure is gaining rapidly in public favor and it ought to have the support of all friends of industrial education.

The states should not wait for federal legislation. The movement has already set in. Many states have made marked progress. This has been the absorbing topic at every educational gathering during the past year. We have received more calls at Ames during the past twelve months for agricultural graduates to teach agriculture in secondary schools than for all other lines of work combined, barring one—the management of farms—and more even than for that one. The agricultural colleges are establishing courses to train teachers for this field and the demand promises to be overwhelming for years to come. Unfortunately, nearly all of the competent men trained for this work at Ames are now being taken to other states.

This is the most important educational problem that has confronted the nation since the passage of the act providing for the land grant colleges of agriculture and the mechanic arts. It ought to receive careful consideration and intelligent, comprehensive encouragement by the coming legislature. A new educational system cannot be put into full operation at once, but this question will not be settled until a sound and efficient system of vocational education, places agricultural and industrial training within the reach of every boy and girl of school age in the school nearest at hand, and at the same time properly correlates it with higher education along the same lines.

The convention adjourned until 1:30 o'clock p. m.

AFTERNOON SESSION.

Convention called to order at 1:30 o'clock by the President, C. E. Cameron.

The President introduced Hon. John T. Stinson, Secretary of the Missouri State Fair, who addressed the convention upon the subject of "State Fairs."

STATE FAIRS.

JOHN T. STINSON, SECRETARY MISSOURI STATE FAIR.

Mr. President and Gentlemen. I think I fully appreciate the opportunity of coming to Iowa and saying a word or two to the men who are interested in the greatest State Fair that is held in this country. I want you to understand that I do not come here with the idea that I can bring anything new, or make any attempt at any advanced ideas along state fair lines. I accepted the invitation to come here for the reason that the directors of this fair, and especially the executive committee have been kind to the Missouri State Fair management. The management of our Fair at Sedalia has always felt that they had the warmest friends in the Iowa State Fair crowd, and when I had an opportunity to come here I accepted the invitation on account of the warm feeling that exists between the directors of the Missouri State Fair, and the Iowa State Fair, and not with the idea that I could come here and tell you anything that you do not already know. Another reason for being tickled to death to come here is that I was raised in Iowa, and it makes a fellow, especially as young as I am, feel pretty good when he can come back here to Des Moines, after twenty years and still have a reasonably good character. And I am glad that I can come here and speak in this room for a minute or two.

Now we realize in Missouri, and I know that the people of Iowa do, that the State Fair is an important educational institution for the reason that it reaches a great many people who cannot be reached by the Agricultural College or the Farmers Institute or other educational institution. There are a lot of people in this world who are so constituted that in order to convince them and interest them they have to see something. I believe a majority of people are in that fix. The people in that fix are no less intelligent than the ones who read the bulletins from the Agricultural College and grasp them at once and go out and make a lecture on them. But the men who are constituted that way, if you do once convince them you have done more for them in a week than you can do otherwise in a lifetime. I believe the majority of men who are past school age and who have not had the opportunities of agricultural education when they were young, are reached through a state fair when probably they could not be reached through any other organization. I believe that our state fairs have done more—good state fairs I mean—have done more to interest a large number of people on the farm in better agriculture than any other organization that we have. I feel that this is the case in Iowa.

I used to attend regularly the Iowa State Fair twenty or twenty-two years ago. It became a habit. And while I came here probably to be entertained, I think at that age that was the main object, to be entertained, yet I went away with a whole lot of information that I needed. I believe that a large per cent of the average citizens who go to the State Fair go to be entertained, but when they go to the Iowa State Fair, for instance, they come away with a head full of ideas, they forget about the entertainment features they were going there to enjoy and come away with a lot of ideas that they will put into practice when they go home, probably breeding better stock, or it may be corn, and the buying of better machinery, and a hundred of other things you might say. It seems to me that we cannot strike a point that will appeal to people more than emphasizing the educational side of the fairs. We have got to have the entertainment features, we must have them if we get people inside the gates, and we have got to have people inside the gates in order to run the fair. But when the people get into the grounds, if the fair is so strongly educational that they forget the entertainment side of it and immediately go to work studying the real exhibits, the fair is fulfilling the purpose that it was intended for.

I think, too, that fair managements should be very careful in arranging a fair so that the man who comes to the fair with his son will at once become interested in the educational side of it more than the entertainment side of it. I have observed that at some fairs, probably not some of the better ones, it seemed to me that the reverse was the case. the men would come there with the boys and there was too much other stuff to entertain them and they did not get the best of it. But I have attended the Iowa State Fair the last few years, as well as twenty years ago, and it seems to me that a man loses sight of everything else but education when he gets inside the grounds. It has been the case here and it has been the case with me. And I tell you that I am thoroughly imbued with the idea that there is no other means of reaching the majority of men on the farms who are past middle age as well as you can through a great state fair, and if you do this, after you interest them, they may take up more thorough investigation of agricultural problems, and I believe that this is the place they are interested. I think Professor Curtis will bear me out in this statement, that to men as a rule, agriculture has been talked so much that they are getting tired of hearing mere spiel; they want to see something, they want to see results, and if you can show that you can interest them, and the state fair is where you interest them and get them started.

The question of the state fair paying—there is no question about it in the world. I believe that the State Fair of Iowa has had as much or more to do with the advanced values in the state of Iowa than any other institution within its borders. The wonderful advancement that has been made in agriculture in Iowa, the marked advancement in farm values, can be traced back to the Iowa State Fair, I think. Now in Missouri, our fair is younger than yours, but we have patterned after the Iowa state fair as closely as we could, and I think that the wonderful success of your institution here had more to do with the establishing of a fair in Missouri than possibly anything else. The men who were back of the movement in the establishing of the Missouri state fair in 1900, were men who attended the Iowa State Fair. They got their ideas here, saw the wonderful good that the institution was doing, and determined to have a fair in Missouri. Our fair is ten years old, has grown a little every year. It takes some time for the people of the state to appreciate a state fair. But the people of Missouri, at least from a legislative standpoint, have appreciated ours. Our appropriations have been liberal, and our buildings are good, and the state seems to stand ready to help the state fair as they do the other educational institutions in the state, and to consider it an educational institution. Something in the neighborhood of half a million dollars has been appropriated in that time for buildings and we feel very proud of them. Our buildings probably are the best things that we have.

Now I do not want to take up very much of your time because I am not a good talker. I simply wanted to tell you that the people of Missouri appreciate a fair as well as the people of Iowa, and I hope that this institution will in the next twenty years make the same growth that it has in the last twenty. It is simply marvelous to me. The first time I had an opportunity of coming to Iowa after leaving here twenty years ago, and visiting the Iowa State Fair, it was a wonder to me, it was simply amazing. I believe you have the best balanced all around fair and exposition at Des Moines that there is held in this country, and from an educational standpoint it has no superior. It is simply the greatest fair from an educational standpoint that I know anything about. We have tried to make our fair in Missouri educational, we have tried to push along on educational lines as much as possible. While we have attractions to get the people there, we try to make them forget as soon as they get inside the gates everything else but those things that are placed there for their instruction and benefit. And as I say, we have patterned after the Iowa State Fair in doing this.

I want to thank you very much for listening to me, and if any of you have an questions concerning our little institution down there—which, by the way, as compared to the Iowa State Fair seems like a county fair, and when I come up here it is slightly discouraging temporarily, but we buckle down to it and hope some day we may have a fair that will compare favorably with yours, but it will be a number of years yet to come before we will be able to be in your class.

The President: We have with us today a man who is secretary of one of the coming county fairs of Iowa. I know from my personal experience it has been making rapid strides along the county fair line, and it certainly affords me pleasure to introduce to you, J. P. Mullen, secretary of the Big Four Fair at Fonda.

ADDRESS.

J. P. MULLEN, FONDA, IOWA.

Gentlemen: I surely must thank Mr. Cameron for these kind words. But it is not because of any merit or ability of mine, I think it is because that at odd times some people told him that I said some kind things of him as a successful state and national fair manager himself. When I came down here yesterday I had an idea that I knew something about the practical conduct of a county fair, but in listening to the men from Kansas and Illinois, and the gentleman that has just preceded me, and more especially to the Hon. Henry Wallace last evening, who in a way had stolen my thunder in regard to the local fairs, I believe I will not be able to add anything original, because they have told the story that I intended to tell, and consequently I cannot be anything much but a plagiarist at this time, because to add something new a man must be somewhat of a genius, and I have no elements of that kind.

Inasmuch as they have talked mostly of the larger expositions, I purpose to confine my discussion in a haphazard way on the practical phases of a county and district fair. Now the larger expositions are supported and boosted usually by national or state government, and in some places like the Inter-State fair by the commercial enterprises, which is considerable, my friends, in those large cities, but I think what adds more to their greatness is the opportunity they have in advertising their shows in the daily press of those cities. We are handicapped to a certain extent in the management of local fairs because we must confine our advertising to the local press and the energy and activity of the official. Now all of these gentlemen have dwelt especially on the educational features of fairs, and let me say that is the most important and most lasting, but the wise secretary, the wise officials of the fair, will not overlook the entertainment part of the fair, and for that reason there has been a great evolution in some of the features that compose the county and district fairs of today from those of ten or fifteen years ago. That change, in my judgment, has been for the better, and if these fairs have value, have merit, they must be permanent institutions, and if this change has been for the better in my judgment they will become permanent institutions in our midst, and therefore of great value to the people and to the community in which they are held. I would not make any comparisons that would reflect on any other feature of entertainment aside from county and district fair, but I believe that for the returns and for the money invested you cannot receive better entertainment or more of it than you can at the county fair. To illustrate, you attend a lecture, it will cost you probably a half a dollar and there is no doubt but you will get your money's worth. You attend a base ball game and it will cost you twenty-five or fifty cents and you will enjoy it. You attend a theatrical entertainment at a cost of $1.00 or $1.50 and you will enjoy it. But at a county fair you can visit with your neighbors socially, you can walk along the pens where the live stock is exhibited, you can inspect the best samples of animal husbandry in the community, you can see the best horses and sheep and swine and poultry, you can go through the floral hall and see the best products of the field and the farm, and you can also these later years see an educational exhibt that has become the best and most prominent feature of our agricultural fairs today; and no matter how much interest may lag in these other exhibits, you will never fail to see the men and women and young folks stop and linger around this educational exhibit, usually presided over by a county superintendent and able corps of teachers. You will not only see those things, but you will hear music from the best band in the community, you will see high grade clean attractions, you will see a good base ball game, probably an automobile race, and you will see as fine harness racing as you wish to see; and it will cost you for this ten hours entertainment about 35 to 50 cents. Now, so far as the entertainment features of fairs are concerned, it occurs to me that there will be no criticism that the patrons of the fair do not get their money's worth.

Now I spoke about the change, the great evolution that is occurring in these fairs. During my personal observation of probably fifteen or eighteen years in connection with local fairs, I remember the time when license was granted for selling intoxicating drinks, I remember I have seen gambling games licensed by the officials, chuck luck games and other objectionable features. But those features have been eliminated, they have passed away, even the snakes today are tabooed, so that the fairs are becoming cleaner and better, and a man can take his wife and family today in all the fairs I know of in northern Iowa, he can go around on the ground and discuss intelligently and healthfully all the features of the present day county fairs. That, in my judgment, is a long stride toward the permanency and the value of our district fairs. Mr. Censor stated last evening that the atendance at these county fairs, exclusive of the state and inter-state fair, probably numbered 800,000 people; so that, including those other two fairs, it is probably within the mark that there will be 1,100,000 people attending fairs in Iowa. There is not any other place where you can obtain that educational information of any consequence, that so many people attend, or that attract so many people. So, consequently, the local fair is entitled, in my judgment, to the support of all the best people of our community.

The educational part of our fairs is rapidly developing, much more so today than in the years past. Here in Iowa probably twenty-five years ago, not more than thirty-five possibly, there was not very many herds of pure bred live stock. And the great strides we have made in the short period of time is due, in my judgment, to these early beginnings and these early contests where the breeders and exhibitors met and contended for victory, for the blue ribbon, and no matter whether the man won or met defeat, especially if he met defeat, in the philisophy of that defeat, he probably gained the inspiration that brought him future victories. And the men who have ascended the ladder of fame in this line are the men who had early struggles to obtain the first round, and the man who won at a county fair did not rest content with the laurels he gained there, he went to the next biggest fair, when he left the county fair he went to the district fair and then to the state fair, and then not content with that went around over the state fairs of the middle west, and attended the fat stock shows in Chicago, and all this after he had his first beginning at the rural fair in his own community. In my judgment the grand parade that was witnessed here on the last day of the Iowa State Fair would be impossible if it was not for the county fairs of the state of Iowa. It was the consummation and the fruition of these fairs, and I have it from men who are competent to judge that it was the greatest pageantry of live stock, the greatest parade in numbers and quality that has ever been exhibited in this or any other country. That, my friends, is a strong statement. And every Iowan should take great pride in the fact that it occurred here in an agricultural state that is barely half a century old.

I am led to believe, also, that these farmers institutes, the corn shows and horticultural shows, are merely the outgrowth of the original ideas that were inaugurated in the local district and county fairs. They have in a way today separated from them, because they have wanted to specialize. Also I must recognize the tribute we owe to our great agricultural school at Ames. It, too, is doing a great work, not only for Iowa, but for all the agricultural states of this country. When I was coming to Des Moines here about three or four weeks ago to attend the Implement Dealers' Convention, picking up the Register and Leader at Jefferson I read that a bullock from the Iowa State College, Shamrock the Second, had carried off the sweep stakes at the Fat Stock show in Chicago. Now there was nothing remarkable about the fact that the Ames Agricultural College carried off the highest award, because it has become an annual characteristic of that institution, but I did think with a little pride, of the appropriateness of this decision being rendered by a man from the Ould Sod to pass judgment on what I consider the real thing. And I look for the Agricultural College to produce a Shamrock III which will be the equal of his predecessors.

The President: Hon. E. J. Watson, Commissioner for the State of South Carolina, was to have addressed the convention on "Publicity and Advertising by the State," but I am sorry to say that I have just received the following telegram from Mr. Watson: "Greatly regret it, but imperative circumstances prevented my making connections to put me in Des Moines in time. Please express my regrets to the assemblage. The disappointment is mine."

We will now listen to the report of the Director of the Iowa Weather and Crop Service for the year, Dr. George M. Chappel.

Dr. Chappel: I have a few figures here that show the estimate, average yield, acreage, average price, and total value of farm crops raised in this state this year. These figures are based on reports from hundreds of correspondents in all parts of the state, and these correspondents are some of the best farmers we have in the state.

IOWA CROPS—FINAL REPORT, 1910.

FINAL REPORT FOR THE STATE—TOTAL YIELD OF SOIL PRODUCT.—VALUE AT FARM PRICES, DECEMBER 1, 1910.

Following is a summary of reports from crop correspondents of the Iowa Weather and Crop Service and Threshermen, showing the average yield per acre and total yields of staple soil products, and the average prices at the farms or nearest stations, December 1, 1910. The value gained by feeding farm crops for production of live stock, poultry and dairy products is not taken into consideration in this report.

Corn—The estimated acreage of the corn crop is 8,940,300 acres, and notwithstanding the fact that the average precipitation for the state for the nine months, January to September inclusive, was only 18.41 inches, which is 8.72 inches below the normal, and the least amount for a like period in the past 21 years except in 1894, when the total for the same months was 17.40 inches, the average yield is 39.7 bushels per acre, and the total output for the state appears to be 354,506,500 bushels. This is the largest yield, with one exception, ever credited in the state. In 1906 the total yeild was 388,348,920 and the average yield was 41 bushels per acre. At the average farm price, 36 cents per bushel, this years corn crop is valued at $127,622,340.00. Nearly all of the crop is now in cribs and the condition of the corn was never better. Last year the acreage of corn as shown by the township assessors reports, was 8,681,850; average yield, 34.6 bushels per acre; total production, 308,036,869, and total value at 51 cents per bushel, $157,098,802.00.

Oats—Average yield, 38.9 bushels per acre; total crop 168,228,970 bushels; farm price 27 cents; total value $45,421,822.00. In 1909 the average yield was 27.0 bushels per acre and the total yield was 117,083,850 bushels; average price, 35 cents; total value, $40,979,347.00.

Spring Wheat—Average yield per acre, 20.2 bushels; total yield, 5,920,100; farm value at 86 cents per bushel, $5,141,286.00. The average yield in 1909 was 12.5 bushels per acre and the total yield was 3,800,460 bushels, at 90 cents per bushel the farm value of the crop was $3,420,414.00.

Winter Wheat—The average yield of winter wheat was 22.3 bushels per acre; total yield, 4,125,820 bushels; average farm price, 86 cents per bushel; value of crop, $3,548,205.00. Last year the average yield was 18.2 bushels per acre; total product, 3,621,953 bushels; average farm price, 92 cents; total value, $3,332,197.00.

Barley—Average per acre, 30.5 bushels; total yield, 16,294,850 bushels; farm price, 56 cents per bushel; total value, $9,125,116.00. In 1909 the average yield was 17.5 bushels per acre; total product, 10,352,040 bushels; average price, 46 cents; total value, $4,761,938.00.

Rye—Average yield 18.8 bushels per acre; total crop, 738,840 bushels; farm price, 61 cents; total value, $450,692.00. The average yield in 1909 was 13.4 bushels per acre; total yield, 556,846 bushels; average price, 60 cents; total value, $334,107.00.

Flax Seed—Average per acre, 10.2 bushels; total product, 172,840 bushels; total value at $2.28 per bushel, $394,075.00. The average yield last year was 10.0 bushels per acre; total yield 173,653 bushels; total value at $1.30 per bushel, $225,745.00.

Potatoes—Average yield per acre, 58 bushels; total product, 10,776,000 bushels; average farm price, 48 cents; total value, $6,250,080.00. Last year the average yield was 90 bushels per acre; total yield 12,427,595 bushels; average price 53 cents; total value, $6,586,614.00.

Hay—Average per acre, 1.15 tons; total yield, 4,903,300 tons; farm price on December 1, $9.75; total value, $47,807,175.00. In 1909 the average yield was 1.4 tons per acre; total product, 6,311,874 tons; total value at $7.00 per ton, $44,183,118.00.

TABULATED CROP SUMMARY.

Corn	354,506,500 bushels	$127,622,340.00
Oats	168,228,970 bushels	45,421,822.00
Spring Wheat	5,920,100 bushels	5,141,286.00
Winter Wheat	4,125,820 bushels	3,548,205.00
Barley	16,294,850 bushels	9,125,116.00
Rye	738,840 bushels	450,692.00
Flax	172,840 bushels	394,075.00
Potatoes	10,776,000 bushels	6,250,080.00
Hay	4,903,300 tons	47,807,175.00
Pastures and Grazing	(Estimated)	94,000,000.00
Timothy and clover seed	(Estimated)	1,000,000.00
Alfalfa and millet	(Estimated)	610,000.00
Sweet corn	(Estimated)	700,000.00
Pop corn	(Estimated)	400,000.00
Fruit crops	(Estimated)	3,000,000.00
Garden truck	(Estimated)	5,000,000.00
Miscellaneous crops	(Estimated)	12,000,000.00
Total value		$362,470,791.00

The Committee on Credentials made the following report, which was on motion adopted:

REPORT OF COMMITTEE ON CREDENTIALS.

Mr. President.—Your committee on credentials beg leave to report as follows:

Section 1657-d of the supplement to the code of Iowa, 1907, defines what shall constitute the agricultural convention. Under the provisions of this section your committee finds that one hundred and five (105) delegates have presented credentials and are entitled to a seat and vote in the proceedings of this convention, as set forth below.

Respectfully submitted,

GEORGE PURDY,
J. W. EDWARDS,
A. R. COREY,
Committee.

DELEGATES ENTITLED TO VOTE IN THE STATE AGRICULTURAL CONVENTION, DECEMBER 14, 1910.

COUNTY AND DISTRICT FAIR ASSOCIATIONS.

Boone Driving Park and Fair Association	J. S. Crooks, Boone
Buena Vista County Agricultural Society	W. J. Sievers, Alta
Calhoun County Fair Association, Manson	C. G. Caskey, Manson
Cass County Agricultural Society, Atlantic	E. F. Berg, Atlantic
Massena District Fair Association, Massena	D. P. Hogan, Massena
Carroll Fair and Driving Park Association, Carroll	Chas. M. Russell, Carroll
Northern Iowa Agricultural Society, Mason City	George H. Purdy, Mason City
Chickasaw County Agricultural Society, New Hampton	Wm. Tiernan
Big Four Fair Association, Nashua	C. L. Putney, Nashua
Clinton District Fair Association, Clinton	C. J. Skinner, Clinton
Davis County Agricultural Society, Bloomfield	H. C. Leach, Bloomfield
Franklin County Agricultural Society, Hampton	N. D. Ferris, Hampton
Grundy County Agricultural Society, Grundy Center	H. N. Dilly, Grundy Center
Jackson County Agricultural Society, Maquoketa	E. A. Phillips, Maquoketa
Jasper County Agricultural Society, Newton	F. E. Meredith, Newton
Johnson County Agricultural Society, Iowa City	George A. Hitchcock, Iowa City
What Cheer District Agricultural Society, What Cheer	Frank Beeman, What Cheer
Madison County Agricultural Society, Winterset	T. J. Hudson, Winterset
New Sharon District Agricultural Society, New Sharon	C. F. Momyer, New Sharon
Eden District Agricultural Society, Rhoades	H. M. Weeks, Rhodes
Marshall County Fair Association, Marshalltown	W. M. Clark, Marshalltown
Mills County Agricultural Society, Malvern	Shirley Gillilland, Glenwood
Monona County Fair Association, Onawa	John Sundberg, Whiting
Union District Agricultural Society, West Liberty	J. C. Nichols, West Liberty
O'Brien County Agricultural Society, Sutherland	J. O. Hakeman, Sutherland

Big Four District Fair Association, Fonda	R. F. Beswick, Fonda
Poweshiek County Agricultural Society, Malcom	Jas. Nowak, Malcom
Tingley Fair Association, Tingley	A. R. Hass, Tingley
Ringgold County Agricultural Society, Mt. Ayr	C. N. Rhoades, Mt. Ayr
Shelby County Agricultural Society, Harlan	Fred Frazier, Harlan
Milton District Agricultural Society, Milton	D. A. Miller, Milton
Eldon Big Four Fair Association, Eldon	E. E. Hiller, Eldon
Buffalo Center District Fair Association, Buffalo Center	J. L. Wheeler, Forest City
Inter-State Live Stock Fair Association, Sioux City	Joe Morton, Sioux City

FARMERS' INSTITUTES.

Adair County	A. C. Savage, Adair
Adams County	Jerome Smith, Corning
Black Hawk County	H. A. Smucker, Waterloo
Bremer County	Chas. Nelson, Waverly
Buena Vista County	C. A. Fulton, Storm Lake
Calhoun County	Henry Parsons, Rockwell City
Cerro Gordo County	D. McArthur, Mason City
Clay County	B. F. Felt, Spencer
Clayton County	L. S. Fisher, Edgewood
Clinton County	D. L. Paschal, DeWitt
Dallas County	Geo. T. White, Dallas Center
Davis County	V. G. Warner, Bloomfield
Decatur County	Ed. H. Sharp, Leon
Dickinson County	J. F. Brett, Spirit Lake
Emmet County	H. W. Woods, Estherville
Franklin County	T. W. Purcell, Hampton
Fremont County	Ike P. Dixon, Sidney
Grundy County	J. R. Stewart, Reinbeck
Guthrie County	Wm. Edwards, Guthrie Center
Hamilton County	E. H. Hawbaker, Stratford
Hancock County	Wm. C. Zuehl, Britt
Hardin County	W. W. Fisk, Alden
Ida County	L. C. Jordan, Ida Grove
Iowa County	U. S. Butler, Williamsburg
Jackson County	L. L. Littlefield, Bellevue
Jefferson County	J. P. Manatrey, Fairfield
Johnson County	R. P. Adams, Solon
Keokuk County	U. S. Chacey, Nugent
Linn County	N. E. Griffin, Walker
Madison County	S. A. Hays, Winterset
Mahaska County	I. N. Taylor, Oskaloosa
Mills County	John F. Summers, Malvern
Monona County	E. M. Cassady, Whiting
Muscatine County	W. P. Nichols, West Liberty
O'Brien County	Otto Peters, Sutherland

Page County	J. C. Guthrie, Shenandoah
Polk County	Chas. Garrett, Mitchellville
Poweshiek County	J. J. Axtell, Deep River
Ringgold County	Grant Stahl, Diagonal
Shelby County	L. H. Pickard, Harlan
Van Buren County	Geo. V. Liffler, Stockport
Warren County	Don L. Berry, Indianola
Winnebago County	Eugene Secor, Forest City
Wright County	J. C. Middleton, Eagle Grove

COUNTIES WHERE NO FAIRS WERE REPORTED.

Clarke County	J. L. Long, Osceola
Dallas County	O. L. Gray, Dallas Center
Decatur County	C. W. Hoffman, Leon
Des Moines County	Wm. H. Bumgardner, W. Burlington
Dubuque County	Louis Reinicke, Dubuque
Emmet County	J. W. Morse, Estherville
Fremont County	Joe E. Coleman, Farragut
Floyd County	J. R. Waller, Charles City
Greene County	C. J. Martin, Churdan
Ida County	W. F. Hutton, Holstein
Lucas County	Henry C. Wilson
Montgomery County	H. E. Deemer, Red Oak
Polk County	J. E. Backman, Des Moines
Union County	W. W. Morrow, Afton

STATE BOARD OF AGRICULTURE.

OFFICERS.

President	C. E. Cameron, Alta
Vice-President	W. C. Brown, Clarion
Secretary	J. C. Simpson, Des Moines
Treasurer	G. S. Gilbertson, Des Moines

DISTRICT MEMBERS.

First District	R. S. Johnston, Columbus Junction
Third District	E. M. Reeves, Waverly
Fourth District	E. J. Curtin, Decorah
Fifth District	E. M. Wentworth, State Center
Sixth District	T. C. Legoe, What Cheer
Seventh District	C. F. Curtiss, Ames
Eighth District	John Ledgerwood, Weldon
Ninth District	Chas. Escher, Jr., Botna
Tenth District	O. A. Olson, Forest City
Eleventh District	H. L. Pike, Whiting

The Committee on Resolutions then made the following report:

"Whereas, much publicity and unfavorable press comment has been made because of the state's decrease in population as shown by the last national census, and,

Whereas, we believe the rural educational system to be one of the prime factors in the depopulation of our rural communities, be it

Resolved, That we commend to the earnest attention of the incoming legislature the necessity of reorganizing and readjusting the educational system of the state to the end that special instruction and training be given along agricultural and vocational lines.

Resolved, We recommend that provision be made for such instruction in agriculture and home economics in the rural schools of Iowa, and to promote same we favor the consolidation of rural schools so far as practicable. We further recommend that state aid be granted for a limited number of county agricultural or industrial high schools under conditions to be prescribed by the legislature.

Resolved, That we heartily approve and endorse the action of the State Educational Board in establishing the two-year course in agriculture at the state college.

Resolved, That we have noted with regret the inroad made by other states upon the faculty of our state college, and we earnestly recommend liberal increases to the support fund for educational, experimental and extension work in agriculture, to the end that we can retain the services of trained talent of the highest grade of efficiency.

Resolved, That we recognize the value of strong local fairs for the promotion of the best agricultural and industrial interests of the communities they serve, and we urge a generous policy on the part of the general assembly toward the increase in the support fund now given the county and district fairs of Iowa.

Resolved, That it is the sense of this convention that the legislature should make suitable provision for the establishment and maintenance of a publicity bureau to properly present the agricultural and industrial opportunities and resources of our state. We believe the state should be represented at all conservation congresses, expositions, and national meetings at which our sister states are presenting to the people of the nation their claims for consideration. Our own residents have little appreciation of the wonderful fertility of soil, opportunities for investment, and splendid rewards awaiting the intelligent application, energy and industry.

Whereas, This meeting will close eleven years of active official relations on the part of Vice-president W. C. Brown, as a member of the Iowa State Board of Agriculture, be it

Resolved, That your committee realizes its inability to express the real value of his services, or its appreciation of the high character, business ability, unfailing courtesy, loyalty and labor through all these years.

Resolved, We regret that election to the generally assembly removes from our board, by resignation, one of the great cattle men of our state, Chas. Escher, Jr., director from the ninth district, and his loss to our board will be keenly felt at this time. We hope and believe that the new duties about to be assumed by Messrs. Brown and Escher will be as invaluable in the general assembly as they have been on the state board of agriculture.

J. P. MULLEN,
E. M. WENTWORTH,
C. J. MARTIN,
Committee.

Mr. Gillilland of Mills County: I want to say a word on one feature of the resolutions. I want to congratulate the farmers of Iowa on the stand they are now taking in this matter. I have been in the legislature for five sessions, and I served previous to that time on the Board of Regents of the State University. I have come to the legislature and asked for money to save the great members of our faculty of the university, and have been told by the farmers that they would give us money, but not a dollar to raise the salaries of the faculty. You people here today are taking a different stand. I am glad to support here today that particular feature of your resolutions. There are some other parts of the resolutions, and I am glad you recognize the splendid services of some of the professors at Ames. I am glad you are ready to spread the Ames influence all over Iowa; that is what I would like to see done. That particular paragraph pleases me mightily, not merely as a member of the former board, but as a member of the legislature, and I support the whole business because that paragraph is in there.

Mr. Waller of Floyd County: Mr. President, I wish to emphasize every word that my friend, Mr. Gillilland, has said, and I wish to say that I believe the farmers of Iowa are today standing more ready than they have ever been in the history of this state to render financial aid of the legislature of Iowa to support every professor in every institution that belongs to this state, and I believe that they are commendable in that spirit. Only the other day I was riding on the cars and a young man occupied the seat with me. I asked him where he was going and he said he was going to one of our institutions of the state in search of knowledge. I talked with him a few minutes and I said, "My friend, are you seeking education in theology or are you going to make a teacher of yourself?" and he said, "I'll tell you. I think I will teach awhile in order to aid myself through. I have not decided that." I said, "Let me give you a little advice: Why don't you go to Ames?" "Well," he said, "I've been thinking of that." I said to him, "My friend, when you go to Ames and you graduate from there you are in demand in every state in the Union. If you go to any other institution of Iowa you are a teacher at $35, $40 or $50 a month and you will stay there. Go to Ames and graduate and be a big man and go out where you can do something.'' He said, ''I think I will do that.''

Mr. Wentworth of Marshall County: Mr. President, your committee recognizes the high standing of each of the great educational institutions of the state. We are delegates to an agricultural convention. We felt that it was proper for us to confine our resolutions to the particular branches of activity in which we are directly interested. It is a crying shame and disgrace that the state of Iowa has been so niggardly in its appropriations to pay living wages to the men who are teaching the younger generations of this state, the boys and girls from sixteen to twenty and twenty-three years of age, in order to enable them to go out into the world and do something for themselves and to make something of themselves. I am told on most credible authority that there are men teaching in these institutions, men teaching in Ames, men who have spent hundreds and upon whom have been spent in the aggregate thousands of dollars to acquire that trained intellect which will enable them to impart to others the lines of least resistance through which to see the object in which they desire to perfect themselves educationally, men working up there for salaries of about $1.000 or $1,200, men of family, not a living wage. And I do not believe that there is one single man in the state of Iowa if he understood those conditions but what would rebel at the very thought that we were treating these men as they have been treated. Every day of my life practically I run across some merchant, some manufacturer, or some man engaged in the various avocations of life, that is criticising, I wont say particularly finding fault, but he is offering endless criticism against the methods of education which have been in vogue in our state. There seems to be a crying need and demand for the vocational or technically trained chap in these days. And it is up to the state of Iowa, as it is up to every intelligent progressive community, to afford the way for these boys and girls that we think more of than even life itself, to acquire that opportunity and to be given those opportunities. I have been proud as I have sat in the senate chamber and listened to the pleas Mr. Gillilland has put up year after year for adequate appropriations along that line, and God grant that this incoming legislature may be made up of Shirley Gillillands and men of progressive ideas along that line that will place the educational institutions of this state on a reasonable business basis, so that the men who are doing the work up there at the institutions that are bringing more honor and more glory to the state of Iowa than all else combined are adequately remunerated.

Mr. Long of Clarke county: There is one section of the resolutions that so far has not been commented upon, that I believe a great many people do not realize the importance of the resolutions coming from this organization. That is the bureau of publicity. Every state is doing a great deal on that. I am in the newspaper business and every week there is thrown into our waste basket thirty or forty columns written by people of Iowa boosting a state which has capitalized its climate. It seems to me with the Agricultural Society taking the stand it does, that a bureau of publicity should be provided for by the next legislature by unanimous vote. There is no reason that Iowa should see the size of emigration going south and east and west and north from us, and every other state in the country increasing in population while we are going backward, not because of any bad results but on account of our prosperity and on account of the fact that we have not the people in this country to do the work the way we want it done. I have spoken on this subject once or twice, and I am in favor of placing the bureau of publicity under the management of the present secretary of the Iowa State Department of Agriculture, because I consider that John Simpson has done more through his little bulletin to inspire pride in the people of Iowa than any other man in the state. I hope to see the bureau of publicity provided for and placed in charge of the State Department of Agriculture.

On motion the resolutions as offered were unanimously adopted.

The President then announced that the next order of business would be the election of the following members of the State Board of Agriculture: president, vice-president, and members from the following districts: Second District, Fourth District, Sixth District, Eighth District, Ninth District (to fill vacancy), and Tenth District.

Vice President Brown in the chair.

Mr. B. F. Beswick of Pocahontas county placed in nomination for president of the State Board of Agriculture, Mr. C. E. Cameron, to succeed himself, and moved if there were no other nominations that the secretary be instructed to cast the entire vote of the convention for Mr. Cameron. The motion was duly seconded and adopted. The vote was so cast by the secretary and Vice President

Brown declared Mr. C. E. Cameron duly elected president for the ensuing year.

Mr. Cameron in the chair.

Mr. Long of Clarke county then placed in nomination for the office of vice president, Mr. John Ledgerwood of Clarke county, which nomination was duly seconded. Mr. Long then moved if there were no other nominations that the secretary is instructed to cast the full vote of the delegation present for Mr. Ledgerwood for vice president, which motion was duly seconded. The vote was cast and the chairman declared Mr. John Ledgerwood to have been duly elected vice president of the State Board of Agriculture for the ensuing year.

For member of the board from the Second District Mr. C. W. Phillips of Jackson county was placed in nomination, which nomination was duly seconded, and as there were no other nominations, a motion was made and adopted that the secretary be instructed to cast the full vote of the convention for Mr. Phillips. The vote was cast and Mr. C. W. Phillips was declared elected member of the State Board of Agriculture from the Second Congressional District for the ensuing two years.

Mr. J. R. Waller of Floyd county placed in nomination for member of the State Board of Agriculture from the Fourth District, Mr. E. J. Curtin of Winneshiek county to succeed himself, which nomination was duly seconded. There being no other nomination, the secretary was instructed to cast the full vote of the convention for Mr. Curtin. The vote was cast and the chairman declared Mr. Curtin duly elected as member of the State Board of Agriculture from the Fourth District for the ensuing two years.

Mr. T. C. Legoe of Keokuk county was placed in nomination for member of the board from the Sixth District to succeed himself. As there were no other nominations the secretary was upon motion instructed to cast the entire vote of the convention for Mr. Legoe. The vote was cast and the chairman declared Mr. Legoe duly elected as member of the board from the Sixth District for the ensuing two years.

Mr. A. R. Hass of Ringgold county placed in nomination for member of the board from the Eighth District to succeed Mr. John Ledgerwood, Mr. F. E. Sheldon of Ringgold county. As there were no other nominations Mr. Hass moved that the secretary be instructed to cast the full vote of the convention for Mr. Sheldon. The vote was cast and the chairman declared Mr. Sheldon duly elected as member of the State Board of Agriculture from the Eighth District for the ensuing two years.

Mr. Mullen of Pocahontas county placed in nomination for member of the board from the Tenth District, Mr. O. A. Olson to succeed himself. There being no other nominations, the secretary was on motion instructed to cast the entire vote of the convention for Mr. Olson. The vote was so cast and the chairman declared Mr. Olson duly elected member of the board from the tenth district for the ensuing two years.

For member of the board from the Ninth District to fill the unexpired term of Chas. Escher, Jr., resigned, Mr. Gillilland of Mills county nominated Mr. John F. Summers of Mills county, and moved if there were no other nominations that the secretary be instructed to cast the entire vote of the convention for Mr. Summers, which motion carried. The secretary so cast the vote and Mr. Summers was declared duly elected member of the board of agriculture from the Ninth District to fill the unexpired term of Mr. Escher.

On motion the convention adjourned.

PART VI

SYNOPSIS OF PROCEEDINGS
OF
STATE BOARD OF AGRICULTURE
AND
COMMITTEE MEETINGS

1909-1910

EXECUTIVE COMMITTEE MEETING.

December 11, 1909.

Committee met with all members present.

The secretary informed the committee of the amount of claims on file and balances due on contracts.

The executive committee negotiated a loan of $3,000.00, bearing interest at six per cent, payable on or before September 1, 1910, at the Iowa Trust and Savings Bank of Des Moines.

The secretary presented the claim of Chas. Weitz' Sons amounting to $2,356.60, balance due on contract on the erection of the third section to the horse barn. Claim was approved and warrant authorized in payment of same.

The secretary notified the committee of the balance due the Des Moines Bridge & Iron Works for various contracts at the grounds amounting to a little over $4,000.00. Warrant for $3,000.00 was authorized issued on said account.

An order signed by the secretary and the president of the State Board of Agriculture was issued upon the auditor of state for the payment of the annual appropriation of $1,000.00 to the Department of Agriculture.

The claim of Miss K. Baumgartner amounting to $50.00 for the loss of articles sent for exhibition at the Iowa State Fair and Exposition in 1909, was considered by the committee and the secretary was authorized to issue warrant for $25.00 in settlement of claim.

As per resolution of the board authorizing the executive committee to appoint a superintendent of grounds, James H. Deemer was appointed to serve during the pleasure of the committee and his salary fixed at the rate of $1,000.00 per annum, payable monthly.

The claim of Mrs. Martha Baber for injuries received at the Iowa State Fair and Exposition in 1909 having been referred by the board to the executive committee, the committee made settlement in the sum of thirty dollars in full of all claims.

The superintendent of grounds was instructed to haul cinders from the state house during the winter months until further orders.

IN VACATION.

January 16, 1910.

As per instructions of the president, Secretary Simpson drew up a contract with the Zero Ice Company for the ice privilege at the fair grounds for the year 1910.

The superintendent of grounds was authorized to have repairs made on the track harrow.

EXECUTIVE COMMITTEE MEETING.

January 19-20, 1910.

Committee met with all members present.

The speed program for the 1910 fair was discussed and adopted. (See premium list for 1910).

Secretary Simpson presented letters from H. Q. Smith of Minneapolis, Minn., with reference to the balance due him from receipts from the Indian Village at the 1909 fair, error having been made in settlement at the time of the fair. Secretary was authorized to issue warrant for $79.32 to Mr. Smith in payment of claim.

IN VACATION.

January 21, 1910.

The superintendent of grounds notified the secretary that the high wind on January 20th had torn off portions of the amphitheater roof.

Contract for printing the premium list for 1910 was given to the Purcell Printing Company of Hampton, Iowa, at $5.25 per page, f. o. b. cars, Des Moines; cover to be the same stock as used on the 1908 list; stock the same as used for 1908.

EXECUTIVE COMMITTEE MEETING.

February 1, 2, 3, 4, 1910.

Committee met with all members present, also members of the board, Curtiss and Olson.

As per resolution of the board under date of December 9, 1909, the above members met as a committee and outlined a system for the purchase of supplies, employment of labor, and work at the Iowa State Fair and Exposition Grounds. It was agreed to offer the following recommendations under head of

DUTIES OF SUPERINTENDENT OF GROUNDS.

The superintendent of grounds shall act under the direction of the executive committee. He shall have general charge of the grounds, buildings, power plant, water system, telephone system, etc., during the year.

Employment of Labor. The superintendent of grounds shall employ such labor as may be authorized; he shall assign such employes to their work, and when in the judgment of the executive committee it is deemed necessary he shall employ foremen of different divisions, such as sanitation, carpenter work, teaming, power plant, lights and telephone lines, streets, walks and grounds, water, etc., who shall have immediate charge over help working in their respective divisions, subject to the orders of the superintendent of grounds.

The superintendent of grounds shall keep detailed accounts showing the amount and expense of labor employed in the different divisions of work, and when authorized shall employ a time-keeper, who shall also have charge of all tools and supplies used by laborers. All tools and implements belonging to the grounds shall be marked and shall be checked in and out of the supply department by the time-keeper.

Payment of Labor. The schedule of wages to be authorized by the executive committee. Time for all labor at the grounds to be filed weekly with the secretary, who will make up pay roll and issue checks covering same.

Purchases. All purchases shall be made by requisition of the superintendent of grounds to the executive committee, and all bills shall be filed monthly with said committee.

The superintendent of grounds shall keep a separate detailed account of all supplies and material used in making repairs and improvements on the various buildings, and other work on the grounds.

All materials, supplies, tools, etc., to be kept in a suitable store room under lock and key, and be given out by the superintendent of grounds or upon his orders.

Inventory. A complete inventory of all buildings, tools and property under the custody of the department of agriculture and located upon the Iowa State Fair and Exposition Grounds shall be taken by the superintendent of grounds on the first day of October each year and filed with the secretary.

C. E. CAMERON,
W. C. BROWN,
C. F. CURTISS,
O. A. OLSON,
J. C. SIMPSON,
Committee.

The secretary was instructed to have the superintendent of grounds take an immediate inventory of all property as set forth above.

The need of a Superintendent of Transportation was discussed and on motion duly offered and adopted the Department of Public Safety was discontinued and a new department created, to be known as the Department of Transportation and Public Safety, with E. M. Wentworth as superintendent for the year 1910.

The committee decided to continue the boys' judging and the girls' cooking contests the present year. Miss Neale S. Knowles of Ames was appointed superintendent of the girls' cooking contest and Prof. E. N. Wentworth of Ames as superintendent of the boys' judging contest.

Secretary was authorized to purchase an adding machine.

The resignation of Superintendent H. R. Wright of the Dairy Department was received and accepted, and on motion duly adopted W. B. Barney was appointed to the position.

Secretary discussed with the committee the advertising budget for 1910. Committee authorized advertising to the amount of $9,700.00.

The good roads movement and meeting called by Governor Carroll was heartily endorsed by the members present and the following delegates were appointed to attend the meeting called to meet in Des Moines on March 8 and 9, 1910: C. F. Curtiss, E. M. Wentworth, W. C. Brown, C. E. Cameron and J. C. Simpson.

As per previous arrangement, Mr. James Atkinson and Mr. Fred Hethershaw met with the committee to discuss the best methods to pursue in the agricultural exhibit at the 1910 fair. Both agreed that the educational exhibit of farm crops made in 1909 was valuable to the farmers of Iowa and expressed themselves in favor of having the work continued along similar lines for the 1910 fair.

Mr. T. C. Legoe, Superintendent of the Exposition building, and Prof. A. V. Storm, Superintendent of the School Exhibits Department, met with the committee and discussed the classification and space for exhibit of school work. The details in perfecting the classification was left to Prof. Storm. It was agreed to set aside space on both sides of the aisle in the east wing of the Exposition Building for the School Exhibits Department.

The matter of employment of a landscape architect for the fair grounds was discussed and the following outline as to what would be required was agreed upon and secretary instructed to have copies made and invite landscape architects to submit propositions:

DRAWINGS REQUIRED.

The drawings as indicated by groups must be on No. 54 Victor egg shell drawing paper (Frederick Post catalog), size not less than 4x7 feet, mounted on substantial frames.

GROUPS.

A. Contour map of the grounds as far east as the present east line of grounds proper extends—100 feet cross section.

B. Group or general plan showing the grounds in their present state of improvement; permanent buildings to be plainly designated from temporary buildings or buildings to be removed in carrying out scheme for permanent arrangement of grounds.

C. A group or general plan showing the entire property, with the location of buildings, drives, walks, sewers and water mains, lines for lighting, etc., indicated.

D. Bird's-eye view of group or general plan "C."

E. Make a complete engineering plan showing location and grades of all walks and drives, cuts and fills on the grounds, and engineering grade levels for the location of all buildings.

The general plan shall be made at a scale of 1''-100'. The birdseye view to be to the same scale, the view point being assumed at will.

All drawings shall be ruled in black ink on No. 54 Victor egg shell drawing paper on the general plan and birdseye view.

The present and proposed buildings and other improvements shall be rendered or washed in with brush and water color so as to make apparent the disposition of buildings, driveways, shrubbery, flower beds, etc., without shading or shadows.

All engineering work required to be subject to inspection and approval by engineer named by owner.

All drawings, etc., must have the approval of the State Board of Agriculture before final acceptance or obligation is discharged on the part of the person employed to do the work.

All drawings must be delivered to the Secretary of the State Board of Agriculture at his office before July 1, 1910.

Any drawings for additional grounds adjoining present grounds to be put on separate paper, but drawn on same scale and made to fit.

BUILDINGS AND SPACE.

There will be required for the purpose of the annual State Fair the following buildings and spaces containing approximate areas as stated; these in addition to the permanent buildings already on the grounds.

Live Stock Department—	
Completion of horse barn (three sections already erected) additional square feet for completing barn	90,000
Completion of cattle barn (two sections already completed), additional square feet for completing barn	50,000
Model dairy barn—adjacent to or near cattle barn	4,000
Sheep barn and show pavilion	60,000
Model sheep sheds and feed lots	10,000
Model for hog barn, sheds, lots, etc	15,000
Building for farm implements and machinery	200,000
Space adjacent or near to above building for private buildings for exhibits of implements, machinery, etc., ten or twelve, each	2,000 to 10,000
Space for outside exhibits and demonstrations of implements and machinery	600,000

Cement industries building	30,000
Space adjacent to or near above building for the erection of private buildings for same purpose, ten or twelve each, 1,000 to	6,000
Dairy building	20,000
Horticultural and floricultural building	50,000
Manufacturers and liberal arts building	75,000
Hospital and dispensary	5,000
Old Settler's building	4,000
Art building	6,000
Sanitary buildings, public toilets, etc., eight, each	1,500
Building for exhibits from state institutions	30,000
Domestic science building	20,000
Transportation building, for vehicles, automobiles, etc	75,000
Police building and sleeping quarters for about 150 men	5,000
Educational building	5,000
Open air auditorium or theater	4,000
Farm buildings—residence, barn, etc	
Supply or store house	8,000
Forage barn	5,000
Fire stations, two each	1,500
Building for sleeping quarters for help in Administration building	
Building for sleeping quarters for help in various departments	
Buildings for express, telephone, telegraph and railway companies	2,000
Two check stands, each	1,000
Cottage for campers' headquarters	700
Space for amusements	300,000
Space for concessions (not necessarily in one location)	200,000
Dining halls, restaurants or cafes, four, each	7,200
Three acres of space for model farm buildings, lawn, etc	
Editorial building	2,000
Five acre tract for farm motor contests	
Space for storage of automobiles	
Fisheries building	2,000
Post office	1,000
Cooling shed for speed barns	8,000

MEETING OF THE STATE BOARD OF AGRICULTURE.

February 11, 1910.

Board met on call of the president. The following members answered to roll call: Cameron, Brown, Simpson, Johnston, Reeves, Curtin, Wentworth, Legoe, Curtiss, Ledgerwood, Escher and Pike.

President Cameron stated the purpose of the meeting was to consider the resignation of Secretary Simpson and called upon Mr. Simpson to state to the Board his desire to sever his connection with the Department of Agriculture and the Iowa State Fair. Following the statement of Mr. Simpson, the matter was freely discussed by the members of the Board and the following resolution was offered and unanimously adopted:

Whereas, Secretary Simpson has notified the board of a very attractive offer made to him by the Kansas State Fair Association of Topeka, Kansas, and,

Whereas, He feels in justice to himself and his family he cannot afford to ignore said offer, and desires at this time to tender his resgination as secretary of the State Board of Agriculture and the Iowa State Fair and Exposition, and,

Whereas, The board feels it cannot in justice to the state department of agriculture or the Iowa State Fair and Exposition, afford to lose the services of Secretary Simpson, therefore be it

Resolved, That the executive committee be authorized and instructed by and in behalf of this board to fix the compensation of Secretary Simpson for extra services as member of and clerk to the said executive committee for the Iowa State Fair and Exposition at eighteen hundred dollars per annum, payable monthly.

Mr. Simpson was called in and the above resolution and action of the board read to him. He expressed to the board his thanks for their confidence and appreciation of his efforts in the past and stated that while it was a financial sacrifice on his part to continue longer in their service, he would abide by their wishes to continue in his present work.

Secretary presented the recommendations prepared by the special committee appointed at the last meeting of the board with reference to the duties of the superintendent of grounds. On motion the said recommendations were approved by the board.

Secretary presented the outline prepared by the executive committee for the employment of a landscape architect to make a permanent plan of the state fair and exposition grounds, which met with the approval of the board.

The committee on per diem and mileage appointed by the president made report, which was adopted.

On motion the board adjourned.

IN VACATION.

March 2, 1910.

The job for the printing of "Greater Iowa" for the season was let to Wallaces' Farmer Publishing Company on the following basis:

3,000	4 pages, not folded	$23.95
4,000	4 pages, not folded	26.35
3,000	8 pages, stitched and one fold	50.15
4,000	8 pages, stiched and one fold	53.95

EXECUTIVE COMMITTEE MEETING.

March 9, 10, 11, 1910.

Committee met with all members present.

The matter of advertising the speed program was discussed and the secretary instructed to place the advertisements about the same as in 1909.

Letters and literature from various parties with reference to free acts, paid shows, music, etc., for the 1910 fair were gone over and the merits of several propositions discussed. Mr. Simpson was instructed to prepare an outline of the amusement program prior to the next meeting to be held in Chicago with officials of the Minnesota, Wisconsin, Indiana and Michigan State Fairs.

Following the instructions of the board as set forth in the resolution adopted at the meeting on February 11th, the compensation of J. C. Simpson for extra services as member of and acting clerk to the executive committee for the Iowa State Fair and Exposition was fixed at $1,800 per annum, payable monthly, dating from March 1, 1910.

The committee, with Mr. C. F. Curtiss, member of the board, considered the matter of employment of a landscape architect to prepare plans for the future permanent development of the Iowa State Fair and Exposition Grounds. Of the several landscape architects of known ability and reputation the committee had invited to meet with them, there were present, in person or by representative, the following:

O. C. Simonds, Chicago, Illinois.
Warren Manning, Boston, Mass., by Mr. Ramsdell, representative.
Charles Mulford Robinson, Rochester, N. Y.

The committee also had a letter from M. J. Wragg of Des Moines, Iowa, containing his proposition. Competitive bids had not been asked, for the reason that the committee wished to avoid any tendency that might lead them to commission some person or persons to do the work by reason of a low bid that they might make regardless of their ability or fitness to properly prepare the desired plans.

Mr. Robinson did not submit a written report or proposition to do the work, but in a verbal statement offered to perpare the necessary plans and make the necessary written report for the sum of $2,000, the department to make the survey and do all the engineering work. However, Mr. Robinson let it be understood that he could not, or would not, give the proposition his personal supervision from the standpoint of being on the grounds.

Mr. Ramsdell, representing Mr. Manning, submitted his proposition in writing as follows:

Mr. J. C. Simpson,
Secretary of the Board of Agriculture,
Des Moines, Iowa.

Dear Sir.—We will undertake the commission for plans for your entire proposition for $2,300. Please understand that this will be the entire cost to your board, for the following named plans, for all our charges for time, traveling expenses and fees for advice. On Mr. Manning's part, I should ask him to go over the ground after the survey is well started, and it would be well, too, to arrange on that date a conference of your board. On my part, I should expect to confer with your board as many times as the necessities of the work demanded, to spend time on the ground to see that the plan and grades fitted the ground and conditions, and such time in either Des Moines or in this office to perfect the plans as far as possible. I should probably not have charge of the survey myself, as I have commissions here during the spring which take some of my time, and this survey would probably be a matter of some weeks. However, it would be in charge of one of our engineers, who is competent to do the entire survey without attention from any one. Of course, I usually make my own surveys too, and if this should come at the beginning of summer or winter, the time when my active work is not so pressing, I would be glad to make this as well.

As for the plans, first would be an accurate topographical survey, of character to suit conditions, and to leave permanent record of it, to fit the proposed improvements after completion of the plan. The ground plan would be on the same scale, 100 feet to the inch, and would show in details all improvements which we deem best for permanent results, as well as the consideration of all suggestions coming from your board. Then an engineering plan of the same would be necessary, showing all details of grading, drainage, elevation of floors of buildings, and other ground construction. To properly show off the plan and design we would want to give you a perspective of the grounds as improved from the best view point, and in such color as would allow reproduction by photograph for public use. Lastly we would give you a small scale drawing in heavy line for reproduction, half tone or otherwise, corresponding to the importance of this work to your state at large. It would be similar in character to the drawing left with you of the present campus of the University of Minnesota.

I understand that there are certain nearby tracts that you hope to include at some time later, which would be on small detached sheets to fit the large one, etc. This we would be glad to do for you as desired, as those tracts would have considerable bearing on our finished plan. In other words, we would want to furnish you with all the desirable plans for your work, and of course any reasonable number of copies of the working plans can be printed for you.

Of the foregoing figure, $2,300, the survey with its traveling expense and addition of the small neighboring tracts, would cost us at least $700.00, the preparation of the plans about as much more, and the expense and charge for time of Mr. Manning would be about $200. The fee for our advice and suggestion of plan would thus be about $700. As you are familiar with architectural work, you know that their fee for plans is from 5 per cent to 15 per cent of the cost of the work, and you will also find that engineers ask 10 per cent of cost as their fee. Judging on this basis, you will see that the cost of your work, laid out in accordance with these plans, will be several times the $2,300 if figured on the commission basis. It is our established custom to do no work on this basis, however, as we wish to be paid according to our effort, and without the suspicion of increased or decreased cost due to personal commission as payment. Therefore this figure represents the entire cost to your board, up to the point where you might wish for advice on the execution of the work, and of course with the understanding that no architectural or building plans in detail will be expected. Of course we might make suggestions as to form or general lines as shown in the perspective. Supervision of work is not included, as we have no knowledge of the amount of time needed for this.

I have overlooked the feature of the final planting plan, which would be done as the others, showing beds in detail, numbered according to a planting list, and so located that a good gardener could carry out the same with little trouble.

If the commission for these plans should be given us, we would take it up as soon as possible, and you would have enough detail for work for the coming summer, and we would have them practically complete on the date you have set, July 1st. As for selection of plants, Mr. Manning has been working up planting plans for this region since 1894, and therefore can be depended upon to make the hardy selection, perhaps with my added experience planting, etc., in the west since 1899.

As to the rendering of our plans, I would ask the favor of your looking over those left last week, which are from the usual run of plans which I could pick up without preparation. As Mr. Manning was on the board of design for the Jamestown Exposition, his experience there, providing for large bodies of people, would be valuable to you. He has also had in charge preparation of campus plans for ten or a dozen universities and schools. In northern Michigan he has been in charge for three years of the building of the town of Gwinn, an employees' village of 6,000 capacity for the Cleveland Cliffs Iron Company of Negaunee and that section. As for our local work, we would be glad to have you write to any of the parties named in my letter to you of the 12th instant.

In conclusion will say that we handle our business from a professional standpoint and have no desire to handle or finance the labor or materials involved, except as supervision, not contracting. We do not want to offer a competitive bid for plans, but a compensation that will allow us to give all the time necessary to the success of the work, as one satisfied client is worth more to us than six who feel otherwise, and a reputation for the best work is worth more than half a dozen good sized commissions.

Yours very truly,

CHARLES H. RAMSDELL,
Representing Mr. Manning.

Minneapolis, Minn.

Mr. O. C. Simonds impressed the committee with both his earnestness and ability to do the work. He proposed to spend a considerable portion of the time the work was under way at the fair grounds, even to placing drawing tables in the Administration Building so that he might be in closer touch and in a position to view the grounds while the plans were taking shape. His written proposition was as follows:

To the Iowa State Board of Agriculture.

Gentlemen.—We will make a topographical survey and plat of the state fair grounds; will study the grounds in connection with this plat and make a plan showing drives, walks, location of present and future buildings, location of woods and plantings; will furnish profiles of roads and walks, and such cross sections as may be needed; will note on the drawings the elevations of the various buildings; make a perspective drawing showing the grounds as a whole; and furnish a report in which the treatment of the grounds will be discussed fully; for the sum of $3,000.

The above drawings will be on a scale of one inch to one hundred feet. We shall also furnish certain detail drawings on a larger scale, because the arrangement of plantings cannot always be shown in detail on a scale of one hundred feet.

Yours truly,

O. C. SIMONDS & CO.

March 11, 1910.

Mr. M. J. Wragg not being present, but having a communication to the committee by mail, the same was read by Mr. Simpson and discussed at length. The committee was opposed to making any payments on the plans until the whole had been completed and accepted by the board, as suggested in the formal outline and specifications sent out to the various landscape architects with the invitation to meet with the committee. Mr. Wragg's communicaion follows:

Des Moines, Iowa, March 5, 1910.

J. C. Simpson, Secretary Department of Agriculture,
Capitol Building, Des Moines, Iowa.

Dear Sir.—I am in receipt of your memoranda and circulars asking for bids for the re-laying out of the state fair grounds.

In the landscape development of these grounds there are two main results to be sought for: First, convenience in handling the crowds so as to avoid confusion and to allow ready communication from one part of the grounds to another; and second, the most beautiful and artistic arrangement of the grounds and buildings consistent with the purpose of the annual exhibition. At present, the fair grounds are but little used outside of a few weeks in the autumn, but under proper development and management the grounds ought to be found of increasing use for other purposes than the main exhibition.

As the grounds now lie, they include a considerable extent of level bottom land, lying at the base of an area of hilly, wooded land. On the level ground a very formal arrangement of buildings and race course is indicated. This arrangement should be divided by drives and streets, radiating from one or two main centers, the whole scheme being in balance. The scheme should be artistic and at the same time afford convenient short cuts for the movement of crowds of people and vehicles, and so arranged that it will not be necessary to have confusion where people are trying to move in opposite directions.

This formal arrangement will have to be governed to a certain extent by the permanent buildings now on the ground, but no temporary buildings should be allowed to interfere with the symmetrical plan. Neither should there be a mixture of the styles of architecture used in the buildings, as has been the tendency heretofore, as such tends to destroy the harmony of the grounds.

An exceptional opportunity is afforded for a development of these grounds of a blending of the formal and natural styles of landscape gardening. The rolling ground can best be developed in the natural manner, and one or two drives or boulevards should wind up the hill, giving at many points a splendid view of the formal grounds below. The prospect from the hill should be especially fine, as the arrangement of the buildings, gardens, water displays, etc., will appear to greater advantage when seen from an elevation.

This rolling ground should be the proper place for resting pavilions and public comfort stations. Relief can be had from the hurry and noise of the grounds below, and cooling breezes can be better felt here. The drives and paths here should be properly tied to the main entrances and principal arteries of the traffic system.

Some sort of water display is badly needed on these grounds. In the grand court, or central plaza, which will be located at the intersection of the two main axes, an architectural fountain could be placed where it would add much to the dignity of the grounds, and as it would need to be operated but a small part of each year it would be an inexpensive feature to operate. Playing water would tend to cool the grounds on the hot sultry days when the fair is in progress. Some statuary could also be placed in favorable situations.

The railways and street car lines which carry the crowds to and from the grounds need to be properly screened.

In the divisions of the grounds, the different departments, such as horticulture, fine stock, arts, manufacturers, etc., should be somewhat segregated, which can readily be done under the formal scheme.

Proper division should be made so that the grounds can be enlarged, and no department should be so confined that it cannot expand in the future. This, too, can be satisfactorily planned for under the formal arrangement.

In the development of these fair grounds, the proposed park and boulevard system of Des Moines should be borne in mind. The main entrances should face on boulevards, if possible, and if the grounds are open all year, or during the warm seasons, it should be possible for pleasure drivers to enter the grounds from the boulevard system, continue around the grounds, and leave by an exit in direct connection with the boulevard system.

A proper pavement for the drives should be planned for, one which can be kept free from dust.

The landscape specialist employed to work out the plan for these fair grounds should enter upon the work with a distinct understanding that he shall not be subject to the dictations of the various members of the board, as in such case his work will be unsatisfactory to both himself and the board. The landscape architect will, of course, frequently consult the board.

We have spent nearly a week in going over and making a close estimate on the grounds and the labor required in carrying it out within the time required, and will ask for the job complete, three thousand, nine hundred and eighty-nine dollars and fifty cents ($3,989.50).

Payments for this work should be made as follows:

One-fifth when work is well begun.

Two-fifths upon completion of surveys.

One-fifth upon completion of maps and drawings.

Balance on final acceptance.

Respectfully submitted,

M. J. WRAGG.

After listening to the several propositions, both verbal and written the following resolution was offered and unanimously adopted.

Resolved, That O. C. Simonds & Co., of Chicago, Illinois, be employed to prepare the plans for the future development of the Iowa State Fair and Exposition Grounds, and be it further

Resolved, That C. F. Curtiss and J. C. Simpson be and they are hereby authorized to confer with Mr. Simonds in regard to the manner in which the work is to be carried on, time of completion, etc., and be it further

Resolved, That the said C. F. Curtiss and J. C. Simpson are hereby authorized and instructed to arrange for acceptance and contract with the said O. C. Simonds & Co., of Chicago, on behalf of the executive committee of the Iowa State Board of Agriculture.

EXECUTIVE COMMITTEE MEETING.

March 21-24, 1910.

As per previous arrangement the executive committee met in Chicago with the amusement committees of the following state fairs for the purpose of discussing the attractions and amusement features at the fairs of 1910: Minnesota, Wisconsin, Indiana and Michigan. There was alse present representatives from the fairs at Memphis, Tennessee; Sioux City, Iowa; and Huron, South Dakota.

The committee contracted with the John C. Weber Band of Cincinnati, Ohio, for a six days engagement. Contract was also closed for the exhibition of the famous painting ''The Shadow of the Cross,'' on a percentage basis.

A representative of the Pain Pyrotechnic Company presented a proposition for a spectacular show in front of the amphitheater. The matter of fitting up the space under the amphitheater for an automobile exhibit was discussed with W. R. Wilmot of Minneapolis, Minn. The character and number of paid shows to be allowed on the grounds during the 1910 fair was considered and propositions received from various carnival companies. Representatives of Wright Bros. and Glenn Curtiss presented propositions for exhibition flights of aeroplanes. The manager of the 101 Ranch Wild West Show submitted a proposition for the said show to be used as a night attraction in front of the amphitheater.

Contracts were made for a number of vaudeville acts.

IN VACATION.

March 29, 1910.

The superintendent of grounds was instructed to have the roof of the swine pavilion painted, also the metal work on the new horse barn.

April 6, 1910.

Mr. O. C. Simonds, landscape architect, of Chicago, met with Mr. C. F. Curtiss and Secretary Simpson, the committee appointed by the board, for a further discussion of matters pertaining to the work of making the plans for the development of the Iowa State Fair and Exposition Grounds. Mr. Simonds submitted the following revised proposition, which was agreed to by both parties:

Chicago, Ill.

To the Iowa State Board of Agriculture.

Gentlemen.—We will make a topographical survey and plat of the fair grounds; will study the grounds in connection with this plat and make a plan showing drives, walks, location of present and future buildings, location of woods and plantings; will furnish profiles of roads and walks, and such cross sections as may be needed; will note on the drawing the elevations of the various buildings; make a perspective drawing showing the grounds as a whole; and furnish a report in which the treatment of the grounds will be discussed fully; for the sum of three thousand dollars ($3,000.00).

The above drawings will be on a scale of one inch to one hundred feet. We shall also furnish certain detail drawings on a larger scale, because the arrangement of planting cannot always be shown in detail on a scale of one hundred feet.

The plats and drawings to be made shall embrace all of the plans and conditions set forth and specified in the certain papers hereto attached marked "Exhibit A," the intention being to incorporate all of the conditions specified in said exhibit in the proposition herewith submitted.

Yours truly,

O. C. SIMONDS & Co.

March 11, 1910.

We hereby accept the above proposition of Mr. O. C. Simonds & Company of Chicago, Illinois.

Signed this 6th day of April, 1910.

EXECUTIVE COMMITTEE,
For the Iowa State Board of Agriculture.
By J. C. Simpson, Secretary.

Des Moines, Iowa, April 6, 1910.

EXHIBIT "A."

Sets in triplicate of all drawings required shall be furnished, one set of which shall be on linen back paper.

GROUPS.

A. Contour map of the grounds as far as the present east line of the grounds proper extends on a scale of 100 feet to one inch. This plan shall show in addition to the variations in elevation indicated by the contours of all of the present buildings, the permanent buildings to be distinguished from the temporary buildings. The topographical plat will also show existing areas of woods and the important trees scattered about the grounds.

B. A group or general plan showing the entire property with the location of buildings, drives, walks, sewers, water mains, lines of lighting, a route for an electric railway making a circuit of the grounds for passenger traffiic, and proposed plantings of trees and shrubs and areas to be devoted to flower beds. The location of existing sewers and water mains shall be furnished by the owner.

C. A birds-eye view of General Plan "B."

D. A complete engineering plan showing location and grades of all walks and drives, including working details and specifications for construction of said walks and drives, and showing also cuts and fills on the grounds. Also the grades for the various buildings.

The general plan shall be made at a scale of 1 inch to 100 feet. The bird's-eye view shall be to practically the same scale, the view point being assumed at will.

The present and proposed buildings and other improvements shall be rendered or washed in with brush and water color so as to make apparent the disposition of drives, walks, shrubbery, flower beds, etc., without shading or shadow.

All engineering work required shall be subject to the inspection and approval by the engineer named by the owner.

All drawings, etc., must have the approval of the State Board of Agriculture before final acceptance or obligation is discharged on the part of the person or firm employed to do the work.

All drawings must be delivered to the secretary of the State Board of Agriculture at his office before October 1, 1910.

Any drawings for additional grounds adjoining present grounds to be put on separate paper, but drawn on same scale and made to fit.

EXECUTIVE COMMITTEE MEETING.

April 18-22, 1910.

Committee met with all members present.

A representative of the Pain Pyrotechnic Company presented an outline for the production of a night show founded upon one of Iowa's early historical events, "The Massacre of Spirit Lake in 1857." Terms of contract for said show were drawn along the following lines: The show to be given five nights; the Pain Pyrotechnic Company to receive the first $7,000 receipts taken in at the amphitheater at night; all over and above the first $7,000 to be divided equally between both parties to the contract. Action in the matter was postponed until the committee could look over the Miller Bros. 101 Ranch Wild West Show with the view of using it in lieu of the show above mentioned.

Secretary Simpson was instructed to write W. R. Wilmot of Minneapolis that the space under the amphitheater would be rented to him at $2,000 for an automobile show during the fair, with the understanding that in event same was rented a cement floor would be laid and the back enclosed with canvas.

Applications from various bands and orchestras over the state for engagements at the fair were considered and the committee decided to engage the Reed Band of Sioux City and the Letter Carriers' Iowa State Band of Des Moines.

The price of seats for the night show at the stock pavilion was fixed at fifty cents for reserved seats and twenty-five cents for standing room.

Mr. Simpson was instructed to secure figures for changing the fence along the east side of the amphitheater paddock in order that bleachers might be erected. Also to have preliminary sketches drawn for a new band stand in the paddock, and to secure figures for laying cement walk around the amphitheater.

A condensed statement of finances was presented by the secretary with the recommendation that the committee arrange for an additional loan of $2,000, making the total amount of bills payable to date $7,000.

The secretary was instructed to get an estimate on the cost of woven wire panels to be placed along the top promenade and the ends of the amphitheater.

The Secretary was authorized to purchase one hundred lawn seats.

Messrs. Cameron and Simpson made a trip to St. Louis, Mo., on the 22d for the purpose of looking over and witnessing the performance of the 101 Ranch Wild West Show with view to contracting for same as a night show at the fair. After careful consideration it was decided it would be inadvisable to enter into contract for said show.

The Des Moines Bridge & Iron Works was notified to complete work on the amphitheater in accordance with the plans and specifications in order that settlement on contract might be made.

The Centaur Wire & Iron Works was notified to put the iron fence along the amphitheater paddock in satisfactory condition so that settlement might be made on contract.

IN VACATION.

April 30, 1910.

Contract was signed with M. W. Savage of Minneapolis, Minn., for the appearance of his combination of pacing horses at the 1910 fair.

Details of the night show, terms of contract, etc., were discussed with representatives of the Pain Pyrotechnic Company and contract signed.

May 10, 1910.

The Nichols Roofing Company, who had contract for the roof on the amphitheater, was notified that the roof was in a bad state of repair and instructed to place same in first class condition at once.

David Sharp was notified to vacate the ground occupied by his dining hall on the fair grounds.

Order was placed with the C. Hennecke Company of Milwaukee, Wis., for one hundred lawn seats at $1.75 each, f. o. b. cars Milwaukee, as per instructions of the executive committee.

EXECUTIVE COMMITTEE MEETING.

May 20-21, 1910.

Committee met with all members present, also members of the board, Olson and Gilbertson.

The matter of tickets for the 1910 fair was discussed at length and the secretary was instructed to place the order for printing all the tickets.

It was decided to erect a band stand in the paddock in front of the amphitheater; also to build a dressing room in the northeast corner under the west section of the amphitheater.

The necessity for an additional barn in the speed department was considered and it was decided to build a barn with stalls opening outside, to be located south of the present barn No. 1.

Contracts for laying cement walks at the fair grounds were authorized with Potts Bros. at 9c per square foot, same specifications as used in 1909 to apply.

EXECUTIVE COMMITTEE MEETING.

June 8, 9, 10, 1910.

Committee met with all members present.

The committee discussed changes for the enlargement of the paddock in front of the amphitheater to provide space for additional seats during the fair. Changes in the fences on the east and west were agreed upon, and the secretary instructed to order whatever additional iron fence was necessary.

Superintendent of grounds was instructed to brick in the east and west ends of the amphitheater facing the paddock.

The secretary was authorized to arrange for renting or buying canvass to enclose the back of the amphitheater.

Superintendent of grounds was instructed to reshingle three of the speed barns.

The secretary was instructed to arrange for renting an extra generator for the light plant during the fair.

AUDITING COMMITTEE MEETING.

June 24-25, 1910.

As per previous arrangement the auditing committee met with all members present. Claims for which warrants had been issued in vacation were examined and approved. Claims on file were examined and approved and the secretary authorized to issue warrants in payment thereof.

IN VACATION.

June 20, 1910.

Contract for additional iron fence sufficient to enclose the enlarged paddock at the amphitheater was given to the Centaur Wire & Iron Works at their bid of $1.35 per lineal foot erected; height of fence 72 inches. The price was the same as paid for the fence erected in 1909, and $1.00 per foot lower than any other figure received.

Order was placed with the Des Moines Tent & Awning Company for the rental of canvas to enclose the back of the amphitheater at a rental price of $60.00. Order was also placed with this company for the rental of 500 chairs at 10c each during the fair.

EXECUTIVE COMMITTEE MEETING.

July 7-8, 1910.

Committee met with the president and secretary present.

W. R. Wilmot of Minneapolis, Minn., was present and closed contract for rental of space under the amphitheater for an automobile show at $2,000.

The matter of oiling the streets on the fair grounds to keep down the dust was considered. The Standard Oil Company named a price of $.0354 per gallon in tank lots, f. o. b. Des Moines, for road oil. It was estimated that one tank, or 6500 gallons, would cover about one and one-half miles of streets, to a width of 20 ft., at an estimated cost of about $300.00.

It was decided to adopt the same policy as in the past in regard to issuing complimentary tickets.

Secretary Simpson presented a statement showing the condition of the finances of the department and advised that an additional loan of $3,000.00 be negotiated that all bills might be paid promptly.

IN VACATION.

July 9, 1910.

Contract for the panel iron work at the amphitheater was given to the Central Wire and Iron Company of Des Moines for $300.00.

July 19, 1910.

A range for use in the kitchen of the Administration Building was purchased from the Chase & West Company of Des Moines.

EXECUTIVE COMMITTEE MEETING.

July 28-30, 1910.

Committee met with all members present.

Letters from Mrs. Abbie Gardner Sharp and Mr. Sperbeck, of Spirit Lake, making complaint or a demand for certain concessions, on account of the production of the proposed night show "Frontier Days in Iowa," were read and the secretary was instructed to write them what the committee was willing to do in the matter.

Secretary Simpson was instructed to order five additional sections of fence for the east end of the paddock.

The secretary was also instructed to arrange for detectives for services during the time of the fair.

The ladies of the Central Church of Christ made application for permission to conduct a day nursery at Rest Cottage and were granted such permission.

The committee discussed with C. H. Turk, assistant superintendent of the machinery department, the applications from several exhibitors of large traction engines and plows, who desired to arrange for space outside the grounds for demonstration work, passing in and out of the west gate two or three times a day and using return checks for admission of any who desired to witness said demonstrations. The committee did not deem it advisable to permit throngs to move in and out of the gates, for the reason that it would interfere with traffic, and for the further reason that they did not deem it wise to begin the practice of issuing return checks.

EXECUTIVE COMMITTEE MEETING.

Aug. 8-9, 1910.

Committee met with all members present, also the livestock superintendents: Messrs. Curtiss of the horse department, Pike of the cattle department, Johnston of the swine department, and Escher of the sheep and poultry department.

Entries in the live stock departments having closed, applications for pens and stalls were considered. It was found there would be a sufficient number of pens in the swine department to provide for all the hogs and practically all of the sheep; accordingly the east section of the swine barn was assigned to the sheep department.

Over one hundred and fifty additional stalls for horses and ponies being required to care for the entries in that department, the secretary was instructed to have the superintendent of grounds make such alterations and build such additional stalls as agreed upon.

It was ordered that the small office building near the Grand avenue entrance be moved to a position south of the new speed barn and fitted up as a show stall for "Dan Patch" during the 1910 fair. Also that the office building near the Rock Island entrance be moved to a suitable location to be used for sleeping quarters for the help in the club dining room.

IN VACATION.

Aug. 10, 1910.

Secretary Simpson and Mr. Brown met Geo. A. Lincoln, State Fish and Game Warden, at the fair grounds and selected a location south and east of the stock pavilion to be used for yards for exhibit by the State Fish and Game Department.

Canvas cover and side walls for a temporary horse barn was rented of the Des Moines Tent and Awning Company for $50.00; same to be put up and fastened securely by the said company.

The following proposals for the installation of lavatories and closets in various places on the fair grounds were received from Pray & Comerford of Des Moines. The same were examined by Messrs. Simpson, Brown and Deemer and the above company notified that their propositions were accepted:

For Hospital Building:	
One closet	$ 63.00
For Rest Cottage:	
One closet and three lavatories	114.00
For Vaudeville Platform:	
Two closets	87.00

MEETING OF STATE BOARD OF AGRICULTURE.

Saturday, September 3, 1910.

Board met at 10 o'clock a. m., as per call of the president, with the following members present: Cameron, Brown, Simpson, Gilbertson, Johnston, Phillips, Reeves, Curtin, Wentworth, Legoe, Curtiss, Ledgerwood, Escher, Olson and Pike.

On motion the reading of the minutes since the last meeting was passed until the next meeting of the board.

A bill of $106.25 for meals served to guests of the fair, including the special dinner given to guests on State Day, was presented by Mr. Gilmore, manager of the club dining hall. On motion same was allowed and warrant ordered issued in payment thereof.

The president asked that the superintendents and officers present the pay rolls for their respective departments for consideration of the board. On motion the pay rolls as presented were allowed and warrants issued in payment thereof.

A bill for $292.00 expense incurred by Gen. John B. Castleman of Louisville, Ky., in bringing his saddle mare ''Carolina'' to the fair for exhibition purposes and not to show for premiums, was allowed and warrant ordered issued in payment thereof.

On motion the executive committee was authorized and instructed to visit fairs and stock shows whenever they could conveniently do so, and to authorize the various members of the board to do the same, such visits being deemed of great value to the committee and board members in the way of gathering information as to the management, handling of crowds, etc.; the actual traveling and other expenses incurred upon such visits to be paid in full when presented.

A letter from Mr. O. C. Simonds, the landscape architect employed by the executive committee to make permanent plans of the fair grounds, was read and sketches of his work submitted. Owing to lack of time, it was deemed advisable to postpone consideration of the plans until a special meeting of the board to be held some time the latter part of September or the fore part of October, and an extension of time for the completion of the work was granted.

On motion the salary of A. R. Corey, assistant secretary, was fixed at $1,500.00 per annum, payable monthly.

Reports having come to the board that a charge of $5.00 per car for health certificate was being exacted from all live stock exhitors shipping to the Minnesota State Fair, which was creating considerable complaint on the part of exhibitors, the secretary was instructed to investigate and ascertain if such a certificate was demanded by the Minnesota Live Stock Board, and if the charge by the state veterinarian was a legitimate charge.

The matter of rental of the fair grounds for the military tournament was left to the executive committee with power to act.

On motion the board adjourned.

EXECUTIVE COMMITTEE MEETING.

September 9, 1910.

Minneapolis, Minn.

Members present, Cameron and Simpson; also members of the board Olson and Pike.

The purpose of the meeting was to consider terms for the rental of the fair grounds for the military tournament, Sept. 26 to Oct. 1; a letter from Geis Botsford, secretary of the Des Moines Commercial Club and a member of the committee from said club to arrange for the grounds for the tournament was read. Secretary Simpson was authorized to send the following reply:

Geis, Botsford, Des Moines, Iowa.

Have been authorized to make you a rental price of $1,000.00. You to have all concessions and to pay water rental and other charges the same as last year.

J. C. SIMPSON,
Secretary.

IN VACATION.

September 15, 1910.

Mr. Moyer, representing the Des Moines Auto Racing Association, called at the office to negotiate for the use of the fair grounds for automobile races on October 6th. After conferring with President Cameron over the telephone, the rental was fixed at ten per cent (10%) of the gross receipts; it being understood that the admission fee was to be twenty-five cents at outside gates and twenty-five cents at the amphitheater.

MEETING OF THE STATE BOARD OF AGRICULTURE.

Thursday, September 29, 1910.

The board met at 10 o'clock a. m., with the following members present: Cameron, Brown, Simpson, Reeves, Wentworth, Curtiss, Olson and Phillips.

The President stated the purpose of the meeting was to listen to a report of Mr. O. C. Simonds, who had been employed to prepare a permanent plan for the Iowa State Fair and Exposition grounds. Mr. Simonds read the following report:

Chicago, Ill., August 29, 1910.

Mr. J. C. Simpson,
Sec'y Board of Agriculture,
Des Moines, Iowa.

Dear Mr. Simpson.—In considering the fair grounds for the purpose of making a plan for their future development, we should first get the problems connected with them clearly in mind. They might be stated as follows:

First, to arrange on a given piece of land, buildings, for the purpose of protecting and showing to advantage various exhibits; second, to make these buildings easily accessible from the various entrances and from each other by means of roads and walks; third, to make an arrangement of trees, bushes and flowers which shall enhance the beauty of the bulidings and of the grounds themselves; fourth, to make the woods and hills available as a camping place, as a place for pleasure driving, as a place for exhibiting the beautiful natural scenery in the vicinity of Des Moines, and, at the same time, to preserve our native forest growth so as to show specimens of all of Iowa's native plants and keep forever an area of native woodland; fifth, to locate an electric railway, making a circuit of the grounds for passenger traffic.

In studying the above problems, we must take, as a basis, the land which has been secured by the state for the fair grounds. The shape of this land and its general topography are indicated on a plat which we have sent you. The land is a little over a mile in length, east and west, and considerably less than half a mile in width. At the west end the land is comparatively level and becomes hilly and wooded toward the east. There is a variation in level of about one hundred and sixty feet. It is natural that the exhibition buildings should occupy the western portion of the grounds because this part of the tract is nearest the city and comparatively level. As certain permanent buildings for farm animals have been erected, it can be taken for granted that live stock should be shown on the level area just north of Dean avenue and opposite the Rock Island switching tracks. In this area the buildings for horses will occupy the northwestern corner, the buildings for cattle, the northeastern corner, swine the southeastern corner and sheep the south-western corner. Permanent buildings have already been built or commenced for the first three of these groups, so the only question remaining would be in regard to the sheep. The space left for them may seem rather contracted, but, perhaps, it will be possible to secure additional land. It seems to us extremely desirable that the rectangle, which notches into the southwest corner, should be acquired. We refer to the tract lying between Logan street and Dean avenue and east of the little stream that runs through the fair grounds.

The buildings for farm implements and machinery, occupying 200,000 square feet, is placed on the plan in what appears to us to be the most convenient and available location. It is central and can be reached by railroad track. There would be space on the different sides of this building for private buildings to be used for the exhibition of implements, machinery, etc. The space for outside exhibits and demonstration of implements and machinery, requiring about 600,000 square feet, is shown at the west end of the grounds. This space is level and can be easily reached by a railroad track branching from the Rock Island road. The cement industries building and private buildings connected with such industries are placed just west of the machinery building. This space is easily reached by people visiting the fair and is near the railroad line. The horticulture and floriculture building, occupying 50,000 square feet, is indicated near the agricultural building, and the dairy building and model dairy just north of the cattle buildings. The manufacturies and liberal arts building, occupying 75,000 square feet, is placed where it will commend a view of the central open area which forms the heart of the fair. Its location is somewhat more convenient than that of the present building, since it is on a lower level and nearer the center of the grounds.

The hospital and old settler's building, the buildings for exhibitions of state institutions, for domestic science and for education and the camper's headquarters are located on the plan beyond the manufacturies and liberal arts building. The art exhibit, with 6,000 square feet, is to be located in the liberal arts building. The transportation building is placed west of the central open area designated on the plan as "park." The police accommodations, with sleeping quarters for one hundred and fifty men, we thought might be placed in the grand stand extension.

The open air auditorium is placed in a natural amphitheater just below the Iowa State College building. The storage place is not far from the superintendent's house and is conveniently located with regard to the grounds as a whole and is also secluded. The forage barn is close to the stock exhibition buildings. Space for amusements is provided along a central street leading west from the park. We found that, at some of the state fairs, amusement places were located along a thoroughfare, usually at one side of the grounds, this thoroughfare being called the "midway" in imitation of the world's fair at Chicago. Perhaps some local term might be selected that would be more appropriate than the "midway." Spaces for concessions are indicated in various parts of the grounds. Dining halls, restaurants, etc., can generally be included in some of the larger buildings. The other buildings, named on the list furnished us, can readily be found on the map with the exception of those for toilet rooms, which, we think, can with advantage generally be included in the larger buildings. In the wooded area, however, where tents are located during fair time, separate toilet buildings will be necessary, but these can generally be placed in excavations in the side hills and planted out in such a way as not to be obtrusive.

In placing the above buildings, we have had in mind the topography as well as convenience. All of the buildings can be reached by drives having easy grades.

The plans show the location of drives. In planning these, the main east and west and north and south drives, that is, Grand avenue and the avenue leading to the Rock Island station, are retained. A driveway has been put in, branching from Grand avenue west of the transportation building and leading south and east past the stock buildings. This drive will relieve Grand avenue and give direct connection between the horse barns and race track and speed barns. A new drive is proposed leading from the south end of the triangle between the agricultural and administration buildings southeasterly to the east end of the stock exhibit. Drives are also placed along the east and west sides of the farm machinery building and through the space for individual machinery exhibits. From the triangle previously mentioned, a main drive extends northeast through an archway in the manufacturies and liberal arts building and continues on east through the main east and west valley of the woodland. From this main drive, branch other drives, which reach various parts of the woods, going past points of interest or to places commanding good views. They can best be studied on the ground in connection with the map. The roads can be constructed on easy grades with the moving of a comparatively small amount of earth. Their drainage, as well as the drainage of the land on either side, can be taken care of by surface flow through shallow depressions covered with sod or other hardy growth. We think it will be unnecessary to construct walks through the woods at the present time. If they should become necessary in the future, they can be constructed where their need is indicated by the lines of greatest travel.

In that part of the grounds devoted to exposition buildings, walks are indicated, but, as many of the buildings have not yet been designed, many modifications will undoubtedly be necessary. We have aimed, by the various drives and walks, to make all buildings easily accessible over direct and easy grades.

In regard to the planting, we think that the boundaries of the grounds should generally be screened, that is, trees and shrubs should be planted so as to shut out the fences and outside buildings. Planting should be done to connect the various buildings with their sites. All steep surfaces, like the outer grade of the race track, should be covered with a woody growth. Walks and drives should be shaded with trees. This is especially true of cement walks which have a disagreeable glare on bright sunny days, unless shaded. Some low planting can be done within the race track without interfering in any way with a view of the races. It will not be necessary to plant many additional trees through the eastern part of the grounds, but, taken as a whole, one should be able to find, somewhere within the boundaries, specimens of all the trees and shrubs that are hardy in the state of Iowa. The grounds are so beautiful and contain so many objects of interest, that it seems to us they should be used throughout the year as a park. Such use is made of the fair grounds at Toronto, which are, in fact, under control of the Park Commissioners, with the exception of a short period previous to and extending through fair time. The woods within the limits of the fair grounds at Des Moines include many fine specimens of elms, lindens, oaks of various kinds, hackberries, black walnuts, Kentucky coffee trees, thorn apples, butternuts and hickories. The number of specimens can undoubtedly be increased with additional planting. It is as important to preserve certain open spaces to show views, foliage and buildings, as it is to do the planting. The finished plans will indicate what we recommend.

In addition to the drives and walks already referred to, we have indicated the line of an electric railroad. It seems to us that, if during fair time, electric cars could be run around a loop partly located within the fair grounds, with stations at different points, much congestion could be avoided both at the time of entering and at the time of leaving the grounds. For instance, if cars approaching the grounds could follow the line, A, B, C, D, E, F, G, H, I, J, K, passengers could get off at A, E, G, H, or I, as suited their convenience, and thus reach the building in which they might be interested, with the least amount of walking. At night, in like manner, they could leave from the various points named. Those in the farm machinery buildings could leave station from I, those in the manufacturies and liberal arts building, from station H, and those from the stock exhibit either at G or E. This electric line could be on a different grade from the ground level, passing over the main gate at E and continuing at an elevation until G is reached, then through a cut to H, then over the main central drive beyond which it would pass through a cut and along the narrow strip of land between the race track and the boundary. In this way, communication between one part of the grounds and another would not be interfered with by the electric cars. If it is found desirable to have a complete circuit within the fair grounds, it would only be necessary to connect the lines along the north and south boundary with the line along the west boundary or over the switch from the Rock Island tracks.

You have proposed a loop A, B, C, N, and back to A. This circuit meets with our approval and we would recommend its use at least until the larger circuit could be constructed.

We send this preliminary letter, together with blue prints, for you and the directors to study over so as to be able to suggest such additional changes as may occur to you.

Yours truly,

O. C. SIMONDS & CO.,
Per O. C. Simonds.

After listening to the report and a discussion of the plans by Mr. Simonds in so far as he had gone with the work, the board adjourned to the grounds to personally go over and view the locations selected for the various building sites, streets, etc. Various changes were suggested and agreed upon and Mr. Simonds instructed to complete his work in accordance with these changes and have the plans in the hands of the secretary by December 1, 1910, if possible.

MEETING OF STATE BOARD OF AGRICULTURE.

Friday, September 30, 1910.

Board met pursuant to adjournment with the following members present: Cameron, Brown, Simpson, Phillips, Johnston, Wentworth, Curtiss, Legoe, Ledgerwood and Olson.

The reading of the minutes of the board and committee meetings was deferred until the December meeting.

A communication from Mr. John Leitch, LaFayette, Ill., with reference to a refund of $44.00 stall rent on account of his inability to get to the fair with his horses, was read, and upon motion it was ordered that the stall rent be refunded and secretary instructed to issue a warrant in payment thereof.

A letter from Mrs. J. M. Diffenbacher of Ames, Iowa, with reference to the scoring on the Individual Farm Exhibit made by her husband, was read. It was the opinion of the board that it would be inadvisable to go behind the awards as made by the judges in this class.

A letter from Margaret McGivney of Bagley, Iowa, with reference to an unpaid premium warrant issued in 1892, was read. The board authorized the payment of said warrant when presented.

The matter of a refund to W. R. Wilmot on account of rental paid for space under the amphitheater for an automobile show was discussed. The secretary gave in brief the terms and substance of the contract between Mr. Wilmot and the fair management (a copy of said contract being on file in the secretary's office), and reported that Mr. Wilmot had paid $1,808.92 of the $2,000.00 called for by the terms of the contract, leaving a balance of $191.08. It was the unanimous opinion of the board that a refund on Mr. Wilmot's contract was due him, owing to the fact that a part of the contract had not been strictly enforced by the fair management, and it was ordered that the unpaid balance of $191.08 plus $208.92 be refunded, and the secretary was instructed to issue warrant for $208.92 as a refund of the amount already paid in.

In the matter of fees collected by the state veterinary department from livestock exhibitors at the last fair, the secretary was instructed to write each exhibitor stating that the collection of such fee was due to a misunderstanding between the state veterinary department and the Minnesota Live Stock Board as the following telegram and letter indicate:

September 2, 1910.

Dr. H. M. Reynolds, St. Anthony Park, Minn.

Is it necessary that exhibitors from here have certificate of health for exhibitions at Hamline. Wire answer.

J. C. SIMPSON.

September 2, 1910.

J. C. Simpson, Sec'y Fair,
Des Moines, Iowa.

Certificate of health required on exhibits but no tuberculin test unless animals remain in state.

S. H. WARD.

St. Paul, Minn., Sept. 21, 1910.

Professor C. F. Curtiss,
Dean and Director, Ames, Iowa.

Dear Sir.—I have just received your letter of September 16th on my return from a veterinary association meeting in the far west.

Our laws provide that cattle, sheep or swine coming into Minnesota for feeding, breeding or dairy purposes must come with proper certificates of health so far as infectious diseases are concerned. It has been the custom for several years during state fairs to have a field veterinarian at the fair grounds when stock is coming in. It it his duty to ask those in charge for their certificates of inspection. In case they have no inspection, then he is expected to make this inspection before the hogs go into their pens. This inspection is free of charge to owners.

In case of stock leaving our state fair for fairs in other states which require such certificates, our field veterinarian (sanitary board employee) inspects stock for owners free of charge.

I may say that a telegram from Secretary Simpson was received at my office during my absence and referred to Dr. S. H. Ward, secretary of our sanitary board. He understood this telegram, a copy of which is before me, to be a general sort of question asking for general provisions of our law. Some time before this he had received a letter from your state veterinarian, Dr. Koto, asking whether stock coming into the Iowa state fair and going on to Minnesota must be inspected for admission to Minnesota. In reply to this Dr. Ward gave a general statement concerning the provision of our law which, however, refers specifically to stock for feeding, breeding or dairy purposes. I presume that this was the letter to which you refer.

It has never been our policy to be arbitrary with exhibition of stock or to bar such stock from admission to the state fair or to the fair grounds. In case such stock comes in without such certificates, they are inspected by men in the employ of the state, as already explained, free of expense to the owners. This is simply a general application for an old provision of our law intended to protect Minnesota from the importation of infectious diseases.

Yours truly,

M. H. REYNOLDS.

Mr. Curtiss explained the terms of the National Draft Horse Breeders' Futurity for yearling colts proposed by the Chicago Live Stock World, such futurity to be held at the 1911 Iowa State Fair and Exposition providing the fair management would add $500.00 to the purse as follows: $200.00 for Percherons, and $100.00 each for the Clydesdale, Shire and Belgian divisions. A motion to accept the proposition of the Chicago Live Stock World was unanimously adopted and $500.00 appropriated for said show as above indicated, it being understood that the classification and rules governing said show must conform to the rules and regulations of the horse department.

The matter of putting another entrance on the north of the camp grounds was considered and a motion adopted to put in a gate as indicated at such time as the city opens and builds a permanent street to the north line of the fair grounds from North street, at a point to be determined by the board.

The selection of an architect for the fair grounds was discussed and upon motion the executive committee was authorized to engage an architect for such work.

Upon motion, unanimously adopted, the executive committee, together with the architect engaged by them, were authorized to visit such places as they may deem advisable to look over buildings for the purpose of getting ideas for a machinery and other proposed buildings for the fair grounds, and that secretary be authorized to issue warrants in payment of expense incurred upon such visiting trips by the said committee.

Upon motion, Superintendent of Grounds Deemer was ordered to have all parties having horses in the barns on the south side to move into the speed barns.

That preliminary sketches for any proposed buildings could be made at an early date and prior to the meeting of the board in December, it was thought advisable by the board to consider and decide at this time upon what recommendations they would make to the next General Assembly in the way of additional improvements at the fair grounds.

After discussing at length the various needed improvements, the following recommendations were decided upon, not as a fulfillment of the many urgent and seemingly imperative needed improvements, but rather a conservative estimate of what the General Assembly could do and properly take care of other necessities. The list follows:

Additional land (on the south)	$ 20,000.00
Implement and machinery building—total estimated cost $160,000.00—one-half	80,000.00
Two additional sections to the horse barns	20,000.00
Two additional sections to the cattle barns	10,000.00
Sheep barn	20,000.00
Sanitary and street improvements, toilets, etc.	10,000.00
Total	$160,000.00

The president appointed as committee on per diem and mileage Messrs. Wentworth and Johnston. The committee filed a report, which was adopted and warrants authorized issued in payment thereof.

On motion the board adjourned.

AUDITING COMMITTEE MEETING.

September 30, 1910.

Auditing committee met with all members present.

Claims on file were examined, approved and warrants ordered issued in payment thereof.

All claims for which warrants had been issued in vacation were examined and approved by the auditing committee.

EXECUTIVE COMMITTEE MEETING.

October 15-17, 1910.

Committee met with all members present.

The meeting was called for the purpose of selecting an architect to draw plans and specifications for fair grounds buildings, as per action of the board at their meeting on September 30.

The committee called in Mr. O. O. Smith of Des Moines, who had been the architect employed by the board for all buildings constructed on the state fair grounds for several years past, and after a careful review of the manner in which the committee wished the work handled, it was unanimously agreed to employ Mr. Smith as architect, he to receive for his work three per cent (3%) of the cost of such building or buildings for which he furnished full and complete working drawings; this to also include such supervision of the work as the committee or board might demand, it being understood, however, that the committee or board would employ a building superintendent to have direct supervision over construction work, Mr. Smith agreeing to furnish such preliminary sketches as the committee or board might desire; it being understood that three per cent (3%) is to be full compensation for all work done by the said Mr. Smith.

The committee arranged for Mr. Smith to accompany them on a visit to the Illinois, Indiana and Michigan State Fair grounds to inspect and study their buildings prior to having preliminary sketches drawn for such buildings as it was proposed to recommend be erected another year.

Plans for the program of the State Farmers' Institute were discussed and the secretary was instructed to arrange the program as outlined by the committee.

Secretary was authorized to have placed $10,000.00 tornado insurance on the amphitheater, if the same could be had.

Committee visited the fair grounds and ordered the superintendent of grounds to have the balance of the cement floor laid under the front part of the amphitheater; also to finish the work of grading the amphitheater paddock. Secretary was authorized to issue warrants in payment of said work.

SPECIAL MEETING OF STATE BOARD OF AGRICULTURE.

December 13, 1910.

Board met with the following members present: Cameron, Brown, Simpson, Johnston, Curtin, Wentworth, Curtiss, Ledgerwood, Pike and Olson.

President Cameron presented the resignation of Mr. Chas. Escher, Jr., member of the board from the Ninth district, which follows:

To the Honorable State Board of Agriculture:

I hereby present for consideration by your honorable body my resignation, and while you have already been advised that it is with dire regret that I present this resignation, other duties make it necessary.

My short stay on the state board as one of its members has been very pleasant and I only regret that I am obliged to lose my identification as one of its members. Assuring you of many kind remembrances, I beg to subscribe myself as,

Yours very truly,
CHARLES ESCHER, JR.

On motion the resignation was accepted.

MEETING OF THE STATE BOARD OF AGRICULTURE.

December 15-16, 1910.

Board met in the offices of the Department of Agriculture in the capitol building with the following members present: President

C. E. Cameron, Vice-President John Ledgerwood, Secretary J. C. Simpson, Members R. S. Johnston, E. M. Reeves, E. J. Curtin, E. M. Wentworth, T. C. Legoe, C. F. Curtiss, F. E. Sheldon, J. F. Summers, O. A. Olson and H. L. Pike.

The oath of office was administered by the Clerk of the Supreme Court, H. L. Bosquet, to the following newly elected members: Cameron, Ledgerwood, Curtin, Legoe, Sheldon, Olson and Summers.

Secretary read the minutes of the board and committee meetings and minutes in vacation, which, upon motion, were approved.

Mr. Simpson informed the board of the receipt of plans for the permanent development of the state fair grounds, with the statement that in his opinion the work would not be complete until a full and complete written report of the work accomplished was filed, and that while the contract with Mr. Simonds did not so state, it was the understanding between the members of the executive committee and Mr. Simonds when he was engaged that he would furnish a small drawing of the completed plans, suitable for having cuts made up from. On motion the report and plans submitted by Mr. Simonds was accepted as a report of progress, and the secretary instructed to notify him to complete the report as contemplated.

The question of building another entrance, opening off of Easton Boulevard on the north line of the grounds, was before the board by request, and the record of the action of the board at the last meeting allowed to stand.

Mr. Croxen of Muscatine County appeared before the board and argued for increase in amount of cash prizes offered on Oxford sheep.

The following report with reference to past, present and future finances of the department, and other data and suggestions for the consideration of the board, was offered by Mr. Simpson.

SUMMARY OF CREDITS AND DEBITS FOR THE FISCAL YEAR.

Beginning December 1, 1909, and Closing November 30, 1910.

Credits.

To cash balance in treasurer's hands Dec. 1, 1909	$ 4,985.25
To net profit 1910 state fair	27,028.69
To total net credits for the year	$ 32,013.94

Debits.

To amount warrants issued for improvements during the year	$ 24,360.98	
To debit loss on expenses other than for the fair or improvements	81.96	
To amount warrants paid issued prior to Dec. 1, 1909	255.96	
To amount of unpaid warrants issued prior to Dec. 1, 1909	31.50	
To amount of unpaid balances due on contracts Nov. 30, 1910	2,157.47	
Total net debits for the year	$ 26,887.97	26,887.97
To net balance credit account Dec. 1, 1910		$ 5,125.97
To amount of unpaid warrants Dec. 1, 1910, of issue of 1910		198.65
To amount due of balance for improvement contracts		2,157.47
To cash balance in treasury Dec. 1, 1910		$ 7,482.09
To debit profit and loss account December 1, 1909		3,314.83
To credit profit and loss account Dec. 1, 1910		5,125.97
To net gain in profit and loss account for year		$ 8,440.78

CREDIT STATEMENT FROM DEC. 1, 1909, TO APRIL AND MAY, 1, 1910, FOR COMPARISON.

To cash balance Dec. 1, 1909		$ 4,985.25
Other receipts to April 1st as follows:		
From two loans	$5,000.00	
From state for insurance	1,000.00	
From other sources	744.81	
Total receipts	$6,744.81	$ 6,744.81
Total credits to April 1, 1910		$ 11,730.06
Less amount received from loans and state		6,000.00
Credit account April 1, less amounts above		$ 5,730.06
To May 1st—		
To cash balance Dec. 1, 1909		$ 4,985.25
To receipts to May 1st, as follows:		
From three loans	$7,000.00	
From state for insurance	1,000.00	
From other sources	1,113.81	
	$9,133.81	9,133.81
Total credits to May 1, 1910		$ 14,119.06

Less amounts received from loans	$7,000.00	
Less amounts received for insurance	1,000.00	8,000.00
Credit account May 1st less amounts above		6,119.06
To amount of warrants issued from Dec. 1, 1909, to April 1, 1910		$ 10,157.50
To amount issued in payment of unpaid contracts and bills carried over from the previous year		5,856.60
To amount of warrants issued on 1910 accounts		$ 4,300.90
To amount of warrants issued to May 1, 1910		$ 11,426.78
To amount issued in payment of unpaid contracts and bills carried over from previous year		5,856.60
To amount of warrants issued on 1910 accounts		$ 5,570.18

STATEMENT OF ESTIMATED CREDITS AND DEBITS AND CREDITS TO APRIL AND MAY 1, 1911.

To April 1, 1911—	
To net credit balance Dec. 1, 1910	$ 5,126.07
To amount of receipts to April 1st (estimated)	700.00
To estimated credits to April 1st	$ 5,826.07
If money from state for insurance is received	6,826.07
To May 1, 1911—	
To net credit balance Dec. 1, 1910	$ 5,126.07
To amount of receipts to May 1, 1911 (estimated)	1,000.00
To estimated credits to May 1st	$ 6,126.07
If money from state for insurance is received	$ 7,126.07
To estimate amount of warrants necessary to issue prior to April 1, 1911, other than on unpaid contracts	$ 5,000.00
To estimate as above to May 1, 1911	$ 6,000.00

CONCLUSIONS.

It would seem after a careful study of the above summaries that the department would have ample funds, if judiciously handled, to meet all necessary expenses to April 1, 1911, and possibly to May 1, if the money due from the state for insurance ($1,000.00) is received before that date, after which time it might be necessary to negotiate loans in an amount of from $2,000.00 to $5,000.00, to enable us to pay all bills promptly. This is assuming that the expense up to April or May 1st will not greatly exceed that for the preceding year, or as estimated in above summary. There is also a possibility that if the coming general assembly appropriates funds for improvements, as will be recommended by this board, some preparatory work will have to be done in the month of April that will increase the labor pay rolls in excess of any estimate made, in which event it might be necessary to negotiate a small loan prior to May 1st.

On December 1, 1909, as you will have noticed, our liabilities exceeded our credits to the amount of $3,314.83; or in other words, we had outstanding obligations, Dec. 1, 1909, in the favor of unpaid balances due on contracts and bills to the amount of $8,300.08, with cash on hand of only $4,985.25. On December 1, 1910, our outstanding obligations amounted to only $2,157.47, with a cash balance of $7,482.09, thus leaving us a balance to the profit and loss account of $5,126.07, a gain for the year to this account of $8,440.80, notwithstanding the large amount expended for improvements and the greatly increased cost of the fair.

PERMANENT PLAN OF THE STATE FAIR GROUNDS.

We have in the office the completed drawings for the proposed permanent plan for the state fair grounds as prepared by the landscape architect Mr. O. C. Simonds, who was employed to do this work by the executive committee last March. The drawings as completed are specified in the contract with Mr. Simond's, viz.: Flat drawings, in colors, of the completed plans; drawings showing the contour of the grounds, bird's-eye view, etc. We have not as yet received the report dealing with the drawings, which was to accompany them, unless the report made by Mr. Simonds and presented to the board on September 30, 1910, is understood and accepted as this report.

It will be the duty of the board at this or a subsequent meeting to pass upon and determine what policy they will adopt with reference to the erection of exhibition buildings by any person, persons, firms or corporations who may desire to build such buildings, and if the building of same is permitted, to determine the locations, how the applications shall be handled, and character of lease or contract that should be executed in the event permission is granted to build.

We presume it will be advisable to leave any consideration of the question of making a beginning on the work for the building of drives as indicated on the ground plans until the spring meeting of the board.

Following the suggestions made by the board at their meeting last September we secured as nearly as possible the names of the owners of the lots lying south of the street car tracks and Walnut street and south of the grounds to Dean avenue, together with their assessed value. We find there are eighty-eight lots in the tract desired, the approximate size of each being about 25x150 ft., except those south of the street car tracks, which are approximately 25x98 ft. The total assessed value of the eighty-eight lots, which includes some twelve or thirteen dwelling houses and one frame store building, as taken from the assessor's books is $15,060.00. The matter of securing options on a portion of them for the purpose of ascertaining the amount necessary for their purchase was turned over to our treasurer, G. S. Gilbertson, he being in closer touch with the real estate men than I, and therefore would be in a better position to handle the matter. From what some of them are asking for their property, especially those having houses upon them, it would seem that the amount estimated, $20,000.00, would be insufficient.

There has been quite a little discussion and dissatisfaction on the part of exhibitors showing large traction engines, because no suitable ground for demonstration work was available. This year, as most of you know, some of them requested that they be permitted to move their rigs in and out of the Grand avenue gate to demonstrate upon ground which they had leased along the north side of Grand avenue west of the grounds. This request the management did not grant, for the reason they thought it would interfere with the traffic through the gates, they being the main and only vehicle admission entrances to the grounds. After this a few of the exhibitors brought two outfits placing one in the grounds and the other on the outside, and requested the management to issue pass out checks to persons desiring to pass out to see the demonstrations. While it is strictly against the policy of the management to issue any pass out checks, they granted the request, reserving the right to cease giving them out at any time when in their opinion it became a nuisance or they thought the privilege was being abused. It was found necessary to do this after a trial, which was resented by some of the exhibitors. It would seem that the board of management should investigate this matter thoroughly and endeavor to provide some ground upon which these demonstrations could be carried on. The land lying north and east of the race track seems to be about the only desirable location. I would suggest that the board either recommend to the legislature the advisability of purchasing this land or seek to secure a long time lease on it.

AMUSEMENTS AND ATTRACTIONS.

As you will recall, in my report read before the meeting yesterday, I referred briefly to the cost of music and amusements for the fair of 1910. What shall be your policy for the coming year and the future should be discussed and determined at this meeting, for it will be necessary for your executive committee to begin at once laying their plans and looking around for suitable attractions for the 1911 fair.

It has been suggested that in lieu of a carnival company shows under numerous tents, a good plan would be to arrange for a large hippodrome show, giving three performances daily, with a nominal admission fee. In order to provide for such a show it would be necessary to build a permanent stage. The seating could be arranged for by using circus seats with canvas covering. While this may not be advisable or practical at this time, there is much in it to think about for the future.

Another suggestion which I can commend to your careful consideration is in the matter of constructing or arranging with outside parties to construct some permanent amusement devices, such as merry-go-round, figure eight, shoot the chutes, trip through Wonderland, etc. If the board does not deem it advisable at this time to expend money for permanent amusement devices (which we would not recommend them to do), they might consider the advisability of dealing with some person or persons who would be interested by giving them a lease covering a short term of years. This latter plan has already been followed by a few of the state fairs, viz.. Oklahoma, Dallas, Tex., and Toronto, Canada.

LIGHT.

I believe this board should again open negotiations with the Des Moines Edison Light Company and see if some agreement cannot be reached whereby they will construct a high tension line from their power plant to the fair grounds for the purpose of furnishing adequate light and power necessary for the fair. The fair can never grow to be a great exposition until such time as the grounds and buildings can be properly lighted. This is impossible with the capacity of the plant now in use, nor is it advisable or practicable to add to the present equipment. In order to increase the capacity of the plant it will be necessary to first enlarge the size of the building, add one or two additional boilers, new engine and new generator. The first cost of these additions would go a long way toward paying for the construction of the high tension line. The line work on the grounds would be the same as before. The cost of maintenance and operation of the present plant would more than pay for double the current we now use. Under this plan we would not be handicapped for sufficient light at the present or in the future, and more especially would escape the great danger of a breakdown at an inopportune time.

GENERAL.

In order that it may be made a matter of record, I present herewith the official opinion of Attorney General H. W. Byers upon the right of the board to pay the secretary of the State Department of Agriculture extra compensation for his services as a member of and clerk to the executive committee upon the State Fair and Exposition work; an extra compensation similar to that paid to the members of the state executive council. The opinion follows:

Mr. J. C. Simpson, Secretary, State Board of Agriculture.

Sir: I am in receipt of your communication of some weeks ago in which you say:

"At a meeting of the State Board of Agriculture on February 21, 1908, the following resolution was unanimously adopted:

"'Resolved, That the general management of the Iowa State Fair and Exposition be delegated to the Executive Committee as provided in Section 1657-i, Chapter 3, of the Supplement to the Code of Iowa, and the said Executive Committee be and they are hereby authorized to employ a secretary or clerk at a salary of not to exceed twelve hundred ($1,200) per year, said salary to be paid from the receipts of the State Fair and Exposition.'

"At a meeting of the executive committee on the same date J. C. Simpson was named as clerk of the executive committee and his compensation for such service was fixed at $1,200 per annum, payable monthly by warrant drawn upon the treasurer, and that the time of beginning said service to date from February 1, 1908.

"Does the statute under which the Iowa State Fair is held warrant the above action by the board and executive committee?"

In response thereto I submit the following:

Section 1657-i, Supplement to the Code, in so far as it is material to the inquiry here provides:

"The board shall have full control of the state fair grounds and improvements thereon belonging to the state, with requisite powers to hold annual fairs and exhibits of the productive resources and industries of the state. They may prescribe all necessary rules and regulations thereon. The board may delegate the management of the state fair to the executive committee and two or more additional members of the board; and for special work pertaining to the fair they may employ an assistant secretary and such clerical assistance as may be deemed necessary. All expenditures connected with the fair, including the per diem and expenses of the managers thereof, shall be recorded separately and paid from the state fair receipts. * * *"

Section 1657-k provides, among other things, for the election by the State Board of Agriculture of a secretary who is required to perform the duties of that office under the direction of the board, and the section in addition prescribes certain specific duties which must be performed by him, but does not require him to devote his whole time to the work of the office of secretary.

Section 1657-n of the Supplement to the Code, among other things, fixes the salary of the secretary at not to exceed eighteen hundred dollars ($1,800) per annum.

When this question was first suggested I was strongly of the opinion that the State Board of Agriculture, through its executive committee could not legally authorize the payment to its secretary of this additional twelve hundred dollars ($1,200) for acting as clerk of the executive committee in charge of the state fair. At that time, however, I was laboring under the impression that all of the receipts of the state fair and exposition were covered into the state treasury, and that this extra clerk hire was to be drawn therefrom. Upon a more careful examination of the several provisions of the law creating the State Board of Agriculture and authorizing the holding of a state fair and exposition, I find that no part of the receipts of the fair and exposition are turned into the state treasury, but are held by the treasurer of the State Board of Agriculture, and, except in payment of premiums, is paid out on warrants signed by the president and secretary thereof. The board's power with respect to the employment of clerical assistance seems to be without limitation, and the amount of the compensation of clerical assistance is left wholly within its discretion.

These facts, when considered with the fact that the law does not in terms require the secretary of the Board to give his whole time to the work of that office, warrants the conclusion that under existing statutes the State Board of Agriculture was within the law in passing the resolution referred to in your communication, and the action of the executive committee is not open to legal objection. I would suggest, however, that because of the question that might easily arise as to the propriety of this action of the board and executive committee, notwithstanding its legality, that the legislature at its next session be asked to amend the statute making the authority to appoint the secretary clerk of the executive committee, and his right to accept such position and the salary that goes with it, entirely clear; thus putting the whole matter beyond controversy or just criticism.

Respectfully,

H. W. BYERS,
Attorney General of Iowa."

March 3, 1910.

I have on my desk a number of communications which I will later present to the Board. I also have a comparative statement of expenses for the 1909 and 1910 fairs, showing increases and decreases in various departments as the case may be; it follows:

On account of	1910 Expense	1909 Expense	Increase	Decrease
Farm crop exhibit	$ 1,377.73	$ 2,294.93	....	$917.20
Exec. com. meetings	485.40	1,084.85	....	599.45
Special com. meetings	998.62	1,066.97	....	161.45
Express, telegraph, telephone	362.40	351.71	$ 10.69	......
Postage	700.00	847.25	....	147.25
Printing	2,012.63	2,405.91	355.76	......
Printing tickets	749.04	....	....	......
Advertising	9,985.19	8,471.69	1,513.50	......
Music and attractions	25,520.25	15,865.62	9,654.63	......
Light and power	1,641.65	1,587.01	54.64	......
Water, account Fair	315.73	300.80	14.93	......
Supplies, stationery, etc.	314.41	475.40	....	160.99
Forage	5,404.54	4,783.95	620.59	......
Salaries and clerical hire	4,265.00	3,676.85	588.15	......
Board meetings	707.80	298.50	409.30	......
President's department	435.50	364.00	71.50	......
Secretary's department	681.40	....	681.40	......
Treasurer's department	1,682.95	1,240.71	442.24	......
Concession and privileges	1,164.10	1,074.80	89.30	......
Speed department	686.15	725.60	....	39.45
Horse department	1,230.50	893.20	337.30	......
Cattle department	1,027.05	783.30	243.75	......
Swine department	614.55	643.10	....	28.55
Sheep department	295.00	600.00	....	52.00
Poultry department	253.00	....	....	......
Implements and mach. dept.	742.72	458.25	284.47	......
Agricultural department	382.50	414.19	....	31.69
Dairy department	186.75	329.50	....	142.75
Horticultural department	170.15	156.15	14.00	......
Floricultural department	77.50	64.00	13.50	......
Fine arts department	588.81	581.40	7.41	......
School exhibits department	268.86	196.42	72.44	......
Admissions department	2,253.39	2,694.64	....	441.25
Transportation and Public Safety department	3,655.46	2,379.80	1.275.66	......
Superintendent tickets dept.	482.00	439.35	42.65	......
Closets and scavenger work.	648.40	505.25	143.15	......
Plants and flowers	492.18	362.40	129.78	......
Boys' and girls' contests	75.71	62.75	12.96	......
Womans' Rest Cottage	59.60	56.45	3.15	......

On account of	1910 Expense	1909 Expense	Increase	Decrease
Individual farm exhibit......	55.53	....	55.53	......
College exhibit	605.79	757.32	....	151.53
Home coming week..........	131.28	269.55	....	138.27
Freight and drayage.........	36.75	....	36.75	......
Misc. expense acc. Fair......	853.27	733.64	119.63	......
Premium ribbons and badges	632.15	734.74	....	102.59
Asst. and foreman, grounds department	139.31	....	....	......
Track work	396.42	....	....	......
Street work	89.75	....	....	......
Cleaning grounds, etc........	2,045.60	796.82	....	......
Misc. work during fair.......	1,437.68	4,044.75	....	492.78
Shadow of Cross booth.......	35.50	....	....	......
Horse show ring............	40.00	....	....	......
Water supply system........	164.53	....	....	......
Rental tents, chairs, etc.....	565.50	356.90	208.60	......
Decorations and flags........	290.00	347.50	....	57.50
Ice	....	292.10	....	292.10
	$80,513.68	$66,963.12	....	......
	....	13,550.56	....	......
Total	$80,513.68	$80,513.68		

Premiums paid	1910	1909	Increase	Decrease
Horses	$10,381.00	$ 7,273.00	$ 3,108.00	......
Cattle	11,778.00	10,153.00	1,625.00	......
Swine	4,135.00	3,035.00	1,100.00	......
Sheep	2,146.00	2,057.00	89.00	......
Poultry	1,036.00	988.50	47.50	....
Agriculture	3,074.00	2,976.50	97.50	......
Pantry and kitchen..........	798.00	793.00	5.00	......
Fruit	892.00	907.25	....	15.25
Dairy	602.00	596.81	5.19	......
Plants and flowers...........	945.00	884.20	60.80	......
Fine arts	1,753.00	1,812.50	....	59.50
School exhibits	422.00	261.00	161.00	......
I. S. C. Scholarships.........	1,000.00	1,000.00	....	......
Speed premiums	10,755.00	9,190.00	1,565.00	......
Winter corn show, 1908......	....	335.00	....	335.00
Total	$49,717.50	$42,262.76		
		7,454.74		
	$49,717.50	$49,717.50		

Following is a statement showing amounts expended for improvements and betterments upon the Iowa State Fair grounds, annually, for the past nine years, and the source from which said funds were derived; also statement of amount paid out in cash for prizes, showing increase that has been made in said period:

	Total amount expended for improvements	Paid from fair receipts	Paid by direct appropriation		Amount paid for cash prizes
1902	$ 63,400.00	$ 26,400.00	$ 37,000.00	Stock Pav	$ 21,736.00
1903	18,000.00	18,000.00	....		23,813.00
1904	59,600.00	12,600.00	47,000.00	Agricult. Bldg.	24,691.00
1905	12,000.00	12,000.00	....		28,556.00
1906	30,000.00	30,000.00	....		31,703.00
1907	116,400.00	41,400.00	75,000.00	Swine Barn	35,504.00
1908	58,300.00	58,300.00	....		38,744.00
1909	157,650.00	57,650.00	100,000.00	Amphitheater	42,262.00
1910	24,360.00	24,360.00	....		49,717.00
	539,711.00	$280,710.00	$259,000.00		$296,744.00

I want to bring to the attention of the board the proposed changes to the stallion and other laws as recommended in the Year Book for 1909.

Mr. Curtiss moved that the executive committee be authorized and instructed to negotiate with the Des Moines Edison Light Company, and if suitable and satisfactory terms could be obtained, enter into contract with them for furnishing electric current for lighting the fair grounds. Motion seconded and carried.

Prof. A. V. Storm, superintendent of the school exhibits at the last fair, presented the following report:

REPORT OF SCHOOL EXHIBITS DEPARTMENT.

PROF. A. V. STORM, SUPERINTENDENT.

To the State Board of Agriculture,
Des Moines, Iowa.

Gentlemen: I herewith submit to you my second annual report of the school exhibit at the Iowa State Fair and Exposition for the year 1910.

GENERAL PLAN.

The exhibit for the year 1909 having been so successful it was deemed best to follow the same general plan for this year, which was done. The principles controlling the making of the premium list remained the same (for a fuller statement of which see my report for last year) and only minor changes were made. A few premium numbers were added and in many of the collective exhibits a third premium was added.

A circular letter was issued asking for suggestions that would improve the premium list and while many replies were received only a few felt the need of changes in the premium list. The changes that were suggested were largely inserted in the new premium list as reported above.

PUBLICITY.

Circulars were sent to superintendents and teachers calling attention to the display and asking them to participate. In my travels about the state during the year there were also many opportunities for bringing the work to the attention of the teachers and patrons.

A special edition of the premium list was issued before the regular premium list was printed and copies well distributed over the state.

EXHIBITORS.

While the total number of exhibitors is small compared with the entire number of schools, we were greatly pleased with the responses that were received.

Considering the lateness of issuing the premium list, the lack of a suitable source of funds on which the schools can draw, the smallness of the premiums, the difficulty of shipping some of the most desirable school work and the newness of the movement, we have a right to feel highly elated over the result, and grateful to the men and women whose devotion to the cause made so good an exhibit possible. Permit me to introduce them:

H. C. Moeller, Supt., Newell Grade and High School.

Kate E. Sullivan, Supt., Bremer Co. Collective exhibit and exhibits from thirty-three of her schools.

C. E. Blodgett, Supt., Atlantic.

Angus McDonald, Supt., Spirit Lake.

F. T. Thompkins, Supt., Dickinson County.

Thos. E. Johnston, Reinbeck High School.

W. F. Cramer, Supt., Red Oak.

A. Palmer, Supt., Marshalltown.

J. A. Wilson, Supt., Osceola County.

J. G. Grundy, Principal, North Des Moines High School.

M. Ricker, Principal, West Des Moines High School.

May Goodrell, Principal, East Des Moines High School.

Z. C. Thornburg, Asst. Supt., Des Moines City Schools. Collective exhibit and exhibits from thirty-two grade schools.

F. E. Fuller, Supt., Sioux County.

O. H. Benson, Supt., Wright County. Collective exhibit and exhibits from twelve of his schools.

Fred Grawe, Principal, Galt.

B. E. Myers, Supt., Clarion.

R. A. Sell, Supt., Alton.

Of course there were many teachers, principals, supervisors and pupils whose labors contributed to these excellent results, but it would be impossible to obtain their names.

RESULTS.

As in 1909 four great classes were provided as follows: 154 Rural, 155 Graded, 156 High, 157 General. The principal facts as to premiums offered and paid are shown in the following table so far as they can be condensed into statistical form:

TABULATED RESULTS OF SCHOOL EXHIBITS, IOWA STATE FAIR, 1910.

	154	155	156	157	Total
No. premium numbers	32	36	35	38	141
No. premiums offered	64	72	70	91	297
No. premium number for which no entry was made	8	4	11	7	30
No. premium numbers for which only one entry was made	7	7	5	10	29
Grand total number of premiums for which no entry was made	23	15	27	15	80
Amount of money offered for premiums	$120	$128	$131	$222	$601
Amount of money paid for premiums	77	102	78	165	422
Offered but not entered for	$ 43	$ 26	$ 53	$ 57	$179

When compared with the preceding year, which is given below, this shows a decided improvement.

Classes: 161 Rural, 162 Graded, 163 High, 164 General; Tabulated results of Educational Department, Iowa State Fair, 1909.

	161	162	163	164	Total
Number of premium numbers	32	36	35	34	137
Number of premiums offered	64	72	70	68	274
Number of numbers for which there were no entries	22	22	30	24	98
Number of premium numbers for which only one entry was made so no second premium paid	9	12	15	11	47
Grand total number of premiums offered and not paid for lack of entries	31	34	45	35	145
Amount of money offered for premiums	$120	$128	$129	$148	$525
Amount paid out for premiums	59	66	57	77	259
Amount not paid out because there were no entries made	$ 61	$ 62	$ 72	$ 71	$266

The particularly gratifying improvements are in the increased number of entries made and the decrease in the number of premiums offered for which no entries were made. The superiority of the 1910 exhibit over that of 1909 in these regards is very gratifying.

SPACE.

Through the courtesy and kindness of Superintendent T. C. Legoe and of the board we were allowed more than double the space we had last year, being assigned three booths on the south side of the east wing of the Exposition building, at the same time releasing to the State Traveling Library the west one of the three east booths on the north side of the building, which we had occupied jointly with them last year. Even with this increase in space we were somewhat crowded and much of the work could not be suitably displayed, but it was so much better than the conditions of one year ago that we were well satisfied. The space in the newly acquired booths was devoted to collective exhibits while those on the north side contained all the miscellaneous and four of the collective exhibits.

PICTURES.

Through the official photographer, Mr. Hildebrand, we obtained excellent pictures of all the exhibits. Some of these have already been used in illustrating an article on the exhibit in "Midland Schools" and cuts from them can well be used in publicity work in the future.

ASSISTANT SUPERINTENDENT.

Supt. J. E. Cundy of Marathon, who acted as assistant superintendent of the department last year, finding at a late date that he could not serve, asked to be relieved, which was done, and F. E. Lark, Superintendent of Schools of Monona county, was appointed in his stead. He was constant in his attention to the duties throughout the fair and proved a most excellent man for the position.

JUDGE.

Mr. J. Fred Olander, formerly an Iowa school man, later chairman of the State Examining Board of South Dakota and now Superintendent of the State Fair School Exhibit of that state, was procured to act as judge and made the awards in a most satisfactory manner.

QUALITY OF THE EXHIBIT.

We are proud of the showing made by our schools. With the increased space we were able to display the work in a much more convenient and effective manner and to so decorate the surrounding as to procure a most pleasing effect both in general and in detail.

There were many expressions of astonishment that children could do such superior work, that so great a quantity and variety of work could be assembled, that such beautiful general effects could be produced with simply school work. If any doubt has existed regarding the desirability and feasibility of having an exhibit of school work it must have little foundation since the 1910 display.

Since then it has been my good fortune to be called as a judge at two other state fair school exhibits and without boasting, I wish to assure you gentlemen that we would not suffer in comparison.

RECOMMENDATIONS.

I wish to commend to you again the eleven recommendations which I urged last year as the ideals towards which we should labor as soon as it is possible to have a suitable building and grounds for this work. But under the present circumstances I wish to recommend the following for the year 1911.

1. That in general the plan of the premium list be continued.

2. That the class called General be divided into two classes, Collective and General.
3. That there be an increase in the number of premium numbers in the collective exhibits so medium sized cities need not compete against larger ones.
4. That there be more and larger premiums offered under each premium number in the Collective class.
5. That the appropriation for this department be $1,100 for 1911.
6. That the premium list be issued early in January.
7. That the premium list for 1912 be issued in October, 1911.
8. That more space be provided for the year 1911.
9. That some better provision be made for watching exhibits and explaining them to the public.

The judges books have been so improved that it is less necessary for me to report to you some details which I included last year, but I have appended some data which may be of interest.

In closing, I wish to thank the officers and members of your board for their uniform courtesy, encouragement and assistance, and particularly Mr. Legoe and Mr. Deemer for their kindness and helpfulness.

I also wish to express my gratefulness to the school men, women and children whose labors alone made such an exhibit possible, and to Mr. C. R. Scroggie and Mrs. Laura L. Thornburg of Midland Schools for the publicity which they have given the exhibit in their excellent report. I congratulate you on the results of this movement which you inaugurated two years ago and bespeak for it your encouragement and support in the future.

Sincerely yours,

A. V. STORM,
Supt. Schools Exhibits.

Secretary here presented several communications from various persons with reference to a plot of ground to be used for demonstration purposes by manufacturers of traction engines, etc. The matter was discussed at length and the secretary instructed to see what could be done in the way of leasing the land immediately north and east of the race track for such purpose and report to the executive committee.

Vice-President Ledgerwood here took the chair.

Mr. Cameron moved that the board proceed to the election of a secretary and treasurer for the ensuing year. Motion seconded and carried.

Mr. Cameron moved that J. C. Simpson be elected to succeed himself as secretary of the State Board of Agriculture for the ensuing year, at a salary of $1,800.00 per annum. Motion seconded and carried.

Mr. Olson moved that G. S. Gilbertson be elected treasurer of the State Board of Agriculture for the ensuing year and that his salary be fixed at $100.00 per annum. Motion seconded and carried.

The following resolution was offered by Mr. Legoe, seconded by Mr. Olson, and adopted:

Resolved, That the management of the Iowa State Fair for the coming year be delegated to the Executive Committee and elective members of the State Board of Agriculture.

Mr. Curtiss moved that the board adjourn until 1:30 p. m.

AFTERNOON SESSION.

December 15, 1910.

Board met at 1:30 p. m., with President Cameron in the chair. Roll call showed the following members present: Cameron, Ledgerwood, Simpson, Johnston, Curtin, Reeves, Curtiss, Sheldon, Summers, Wentworth, Olson, Pike and Legoe.

Secretary read a communication from the International Harvester Company also from the Louden Machine Company and the Plymouth Gypsum Company, relative to space for the erection of exhibits buildings on the State Fair grounds. Said communications were referred to the executive committee and communications placed on file.

Secretary read letters and petitions from breeders of Brown Swiss cattle relative to classification for that breed of cattle in the Iowa State Fair premium list.

Mr. Simposn moved that all recommendations for revision of the premium list be offered at this time and referred to a committee consisting of the executive committee and three additional members. Motion seconded by Mr. Olson and carried.

Mr. J. A. Dyer appeared before the board and presented the following statement:

Des Moines, Dec. 15, 1910.

To the Iowa State Department of Agriculture:

E. E. Fields and E. E. Gooch show to you that on or about Aug. 25th, 1910, they entered into contract with your department, the same being No. 105, according to the terms of which they had the exclusive melon privilege upon the State Fair Grounds for the year 1910.

That as consideration for said melon privilege, the parties hereto did pay, or caused to be paid, said department the sum of three hundred dollars ($300.00).

That they performed each and all the conditions and met the requirements specified in said agreement, and in connection therewith did expend the sum of about fourteen hundred dollars ($1,400.00) to necessarily prepare and conduct said enterprise.

The parties hereto further show that subsequent to the entering into of this agreement, the said department did permit and allow one Galloway of Waterloo, Iowa, the privilege of disposing of melons upon said grounds in contravention of the agreement entered into between the parties hereto and this department, and that the said Galloway did dispose of melons upon the grounds of the Iowa State Fair, held at Des Moines, Iowa, during the year 1910, to the number of 9,000 melons, or a little more than seven carloads of melons.

The parties hereto further show that they or one of them have had or been interested in the exclusive right of the melon privilege upon the Iowa state fair ground for the major portion of the time since the said fair has been conducted at its present location, and they paid or caused to be paid the charges exacted by this department each and every year, and that they had reason to believe and did believe that they would have the exclusive melon privilege as provided in said contract.

The parties hereto show that they were equal partners in said enterprise and had equal rights, and under and by virtue of contract No. 105, and that this department by permitting and allowing the said Galloway to dispose of said melons in contravention of their said contract, did it to the great damage of these parties, and these parties show that by virtue of the department permitting the said Galloway to dispose of seven carloads of melons, they are damaged in the sum of fifteen hundred dollars ($1,500.00).

Signed,

E. E. GOOCH,
E. E. FIELDS.

After hearing the statement made by Mr. Dyer, the following resolution was offered, which was seconded by Mr. Olson and unanimosuly adopted:

Whereas, The communication of J. A. Dyer, attorney, representing Messrs. Gooch and Field, has been presented to this board by the secretary, and afterwards by personal appearance before the board by the above named gentlemen, and

Whereas, After careful investigation and consideration of concession contract No. 105, we fail to see wherein that contract has been in any way, shape or manner nullified by any action of the board, therefor be it

Resolved, That we respectfully decline the claim.

Mr. Curtin presented a communication from exhibitors in the agricultural department relative to changes in the rules and classification for that department in the premium list, which was referred to the special committee having charge of the revision of the premium list.

Mr. Olson moved that the executive committee be instructed to appoint superintendents for the various departments of the fair for 1911, and that they report said appointments to the board the following day for confirmation. Motion seconded and carried.

Secretary Simpson presented a letter from E. H. Jackson of Jefferson, Iowa, relative to holding a public sale of Poland China swine some time during the 1911 fair. Upon motion the matter was referred to the executive committee and the superintendent of the swine department for further action.

A lengthy discussion here took place relative to the opening and closing days of the next fair. Mr. Simpson moved that the dates for the fair of 1911 be fixed as follows: From Thursday, August 24th, to Friday, September 1st, inclusive; that the time for closing entries in all departments not otherwise provided for be fixed at 10 o'clock p. m., Wednesday, August 23rd; that admissions to be charged be fixed as follows: For Thursday, August 24th; Friday, August 25th, and Sunday, August 27th, the admission be twenty-five cents, vehicles free, except as otherwise provided with special reference to campers; that the general admission for the balance of the time be fifty cents to adults, twenty-five cents for children between the ages of eight and fifteen years, and twenty-five cents between the hours of 5 and 9 o'clock p. m.; charge for vehicles to be the same as for the past year unless otherwise provided for; that no exhibits be released prior to 4 o'clock p. m., Friday, September 1st; that judging in all departments commence at 9 o'clock p. m., Saturday, August 26th. Motion carried.

Mr. Curtiss presented report of the horse department and recommendations for revision of the premium list of that department for 1911 fair, which report and recommendations were ordered placed on file.

Mr. Curtin moved that $1,500.00, or so much thereof as may be necessary, be appropriated for the purpose of paying the expense of making an educational exhibit of field and farm crops in the Agricultural building at the 1911 fair, to be expended under the supervision of the executive committee and the superintendent of the agricultural department. Motion carried.

Mr. Curtin moved that $500.00 be added to the classification for premiums offered on the individual farm exhibits, and that the apportionment be made in accordance with the recommendations made by the exhibitors. Motion carried.

On motion the board adjourned until 9 o'clock a. m., Friday, December 16th.

MEETING OF STATE BOARD OF AGRICULTURE.

December 16, 1910.

Board met at 9 o'clock a. m., pursuant to adjournment, with President Cameron in the chair. Roll call showed the following members present: Cameron, Ledgerwood, Simpson, Johnston, Curtin, Wentworth, Legoe, Curtiss, Sheldon, Summers, Olson and Pike.

Secretary read the minutes of the board meeting for Thursday, December 15th, and same were approved.

Mr. Johnston moved that the executive committee be authorized and instructed to pay Mr. Simpson for extra services as a member of and acting clerk to the executive committee for the special work pertaining to the Iowa State Fair the sum of eighteen hundred dollars ($1,800.00) per year, payable monthly, out of the State Fair receipts. Motion unanimously carried.

Mr. Curtiss moved that the executive committee be authorized to employ a custodian of the fair grounds, at the same salary and terms as last year. Motion carried.

The executive committee offered the following report on the assignment of superintendents for the various departments of the fair for the coming year. Mr. Legoe moved the adoption of the report as read. Motion carried.

SUPERINTENDENTS OF DEPARTMENTS, 1911.

Transportation and Public Safety	E. M. Wentworth
Ticket Auditing	C. W. Phillips
Admissions	O. A. Olson
Concessions and Privileges	W. C. Brown
Live Stock Sanitation	Dr. P. O. Koto
Horses, Ponies and Mules	C. F. Curtiss
Speed	E. J. Curtin
Cattle	H. L. Pike
Swine	R. S. Johnston
Sheep	J. F. Summers
Poultry	J. F. Summers
Implements and Machinery	John Ledgerwood
Agriculture	F. E. Sheldon
Pantry Stores and Apiary	F. E. Sheldon
Dairy	W. B. Barney
Horticulture	E. M. Reeves
Floriculture	Wesley Greene
Fine Arts, etc.	T. C. Legoe
School Exhibits	A. V. Storm

Mr. Johnston moved that the board recommend to the Superintendent of the Department of Public Safety for appointment as marshals to serve during the coming fair, the names of the three men who served in 1910, viz: C. M. Akes, Leon; T. J. Hudson of Winterset, and Carl Shields of Afton; and that their salary be the same as paid in 1910. Motion carried.

Mr. Curtiss moved that it is the sense of this board that exhibitors in the live stock departments should not be required to pay an inspection fee before leaving here to ship to other states for exhibition purposes. Motion carried.

Mr. Johnston moved that the executive committee be empowered and instructed to negotiate loans from time to time during the current year, if necessary, not exceeding ten thousand dollars ($10,000.00) in the aggregate. Motion carried.

Mr. Ledgerwood moved that the matter of changes and amendments to the stallion law be referred to the Committee on Animal Industry. Motion carried.

Mr. Curtiss moved that the question of creating a Bureau of Publicity and Development for the state of Iowa be referred to the Committee on Powers and Duties of the Board, with instructions to co-operate with other organizations that may be active in the matter, and endeavor to secure the best legislation possible. Motion carried.

Mr. Simpson moved that the board pay out of the fair funds one-half of the expense of the exhibit from the Iowa State College of Agriculture and Mechanic Arts at the fair of 1911 in amounts up to and not exceeding $800.00. Motion carried.

Mr. Simpson called to the attention of the board the annual cost of insurance carried on fair ground buildings, stating that the total amount of premiums now exceeded $1,400.00, the state appropriating annually for that purpose only $1,000.00, the balance being paid out of the fair funds. Mr. Curtiss moved that the matter of insurance to be carried on the fair ground buildings be referred to the executive committe with power to act. Motion carried.

Mr. Johnston moved the adoption of the following resolution providing for a committee on the revision of the premium list. Motion seconded by Mr. Curtiss and adopted:

Resolved, That it is the sense of this board that it would expedite business, as well as be economical, to have a Committee on Revision of Premium List. That this committee be a standing committee, consisting of the executive committee and three additional members, and that all changes of any kind in the premium list be referred to this committee not later than October 1st each year, and that this committee after confering with the executive committee report their recommendations for all premiums for the coming year at the December meeting of the board.

Mr. Curtiss moved that the matter of conditions governing the use of buildings to be erected on the State Fair Grounds by exhibitors and others be referred to the Committee on the Revision of the Premium List, Rules and Regulations. Motion prevailed.

Mr. Curtiss moved that it is the sense of this board that a class for Brown Swiss cattle be added to the premium list for 1911, classification to be the same as that allowed the Ayrshire breed. Motion carried.

Mr. Ledgerwood moved that it is the sense of this board that at least $50.00 should be added to the class for Oxford sheep. Motion carried.

Secretary presented the following report presented by Mr. Wesley Greene, superintendent of the Floriculture department, of the 1910 fair.

REPORT OF SUPERINTENDENT OF FLORICULTURAL DEPARTMENT.

December 16, 1910.

Department of Agriculture.

Gentlemen.—The dry weather this year made it very difficult to secure a good display of plants and flowers for the exhibit at the fair this year. I would therefore suggest that the amount offered for premiums in this department be increased to $1,200 or $1,300 as may appear best to the board to promote the interest of the department of agriculture.

Yours truly,

WESLEY GREENE,
Superintendent.

Mr. Wentworth here presented and read the following report as superintendent of the Department of Public Safety and Transportation for the 1910 fair:

REPORT OF SUPERINTENDENT OF PUBLIC SAFETY AND TRANSPORTATION.

December 15, 1910.

To the President and Members of the State Board of Agriculture.

Gentlemen.—In submitting a report upon the work assigned to me as superintendent of Transportation and Public Safety, beg leave to say I am under great obligations to each and all for the uniform courtesy shown and the high average standard of the men recommended for positions in the public safety department. The work was new to me and I do not feel at all satisfied with the work accomplished, although I would be ungrateful were I to fail to acknowledge the many kind expressions which were tendered upon the work of the department. I have made a record, as I conceived it, of the relative efficiency of the men who served on the force the past year, which I will be very glad to turn over to my successor with suggestions as occur to me for the betterment of the service in the future. You are familiar with the necessities for better housing of these men, and I feel sure will make such provisions as possible to remedy same at your earliest opportunity. The majority of these men come to us actuated by the same spirit that animates every member of the board to give the best there is in them for the association's advancement. They left typical Iowa homes, and in the main accepted the conditions as found, but it would add vastly to the esprit de corps of this body were we in position to give them better accommodations. One of the pressing needs for the superintendent of this department is a larger and more convenient office with a telephone for its exclusive use, and a private line from the superintendent's office to the barracks. The work of the round-up would be greatly simplified if the executive committee would arrange to have streets in the camp ground cleaned up and run east and west instead of north and south as at present. I hope attention will be given to this, as it will be of equal advantage to the admisions department. In policing and general oversight of the grounds I would suggest that we use a mounted man both day and night. The long beat, and frequent trips required to locate tents and see that same are kept in a line for the convenience of the admission department which is very essential, entails a great deal of hard work upon footmen. The most serious complaints that were brought to the attention of the police department, and not only caused the most annoyance and made a great deal of unnecessary work, was brought about by misunderstandings of the concessionaires and lunch men. If some system can be arranged which will make plain to the people the exact or correct charges it would remove the most unpleasant feature and do more to allay criticism than anything that has come to my notice.

The transportation department was largely in the nature of an experiment; and owing to street car troubles there was not put into operation the promised plan for through car service; and owing to breakdowns on the Rock Island we were not able to accomplish as much in the way of getting shipments out on Friday as we desired. I wish to call attention to the fact that a large number of exhibitors made use of this department, placing their order for cars and making arrangements through us for loading and shipping. The writer believes if the fair should close on Friday and allow exhibitors to begin packing up at 10:00 a. m., it would be a great boon for these gentlemen, and redound to the ultimate prosperity of the fair. It might be necessary as well as advisable in case this should be done to move forward the opening date to Friday and require all exhibits to be in place in time for the work of judging on Friday morning. There are many arguments that could be advanced outside of these presented which are purely in the working out of the transportation proposition. I have in mind a number of things which I believe would be entirely feasible, and with the experience of last year, feel would redound to the credit of the fair.

Yours truly,

E. M. WENTWORTH,
Superintendent.

Mr. Curtiss moved that the executive committee be authorized and instructed to have bills prepared and presented to the legislature with reference to appropriation for additional improvements on the State Fair Grounds in accordance with the action of the board at their meeting held in September. Motion carried.

Mr. Curtiss, chairman of the Committee on Animal Industry, presented a rough draft of a bill relative to the creation of a live stock sanitary board, which bill was to be later presented to the legislature. Mr. Simpson moved that the report and copy of the bill be received and approved by the board, and that the Committee on Animal Industry pass it on to the chairman of the Animal Industry Committee of the Thirty-fourth General Assembly recommending its enactment. Motion carried.

President Cameron appointed Messrs. Johnston, Legoe and Pike as committee on per diem and mileage.

President Cameron announced as the Committee on Revision of the Premium List for 1911, the members of of the executive committee, together with Messrs. Johnston, Curtiss and Pike.

Mr. Wentworth moved that all unfinished business be referred to the exetive committee with power to act. Motion carried.

The committee on Per Diem and Mileage filed their report and moved that same be adopted and warrants ordered drawn in payment of same, which motion carried.

On motion the board adjourned to meet at the call of the president.

PART VII.

PROCEEDINGS

OF THE

Annual Meeting of the Swine Breeders' Association

1910

BY C. C. CARLIN, SECRETARY

OFFICERS

J. H. WATSON, President	Madrid
GEO. T. WHITE, Vice-President	Dallas Center
C. C. CARLIN, Secretary and Treasurer	Des Moines

IOWA SWINE BREEDERS' ASSOCIATION.

The annual summer meeting of the Iowa Swine Breeders' Association for 1910 was held at Des Moines, Tuesday, June 14th. Owing to crop conditions the attendance was not as large as in some former years but a very interesting program had been prepared and those breeders who found it convenient to leave their work considered their time well spent.

Mayor James R. Hanna, of Des Moines, delivered an address of welcome which follows:

"It falls to my lot frequently these days to make different formal addresses of welcome. It is a pretty hard thing to know just what to say to make any surprise. You all know you are welcome and you expect me to say something you have heard a good many times so it is pretty nearly impossible to do anything new or strange. I feel pretty safe in welcoming the swine breeders to the city because I know that when a man has learned to keep his temper in the hog lot he is likely to keep control of himself in the city with all the city temptations.

I think I hardly need to dwell upon the importance of these meetings. I think one of the problems that is before the people of the United States today, however, is very largely in your hands. We hear everywhere the query, 'How are we going to counteract the present high cost of living?' and I really believe that the situation is more largely in the hands of the swine breeders and stock raisers and farmers in general than in any other class perhaps. There are economies in every division of society but the fact of the matter is that we have just got into the economic stage where it takes more labor to produce the same amount on an acre of ground than it used to do and where you have to begin to put more work on and get less returns for the work. The only way you can get the same old returns for the work is to mix in a large amount of brains and the farmers and stock raisers of the United States have that problem before them. You have to furnish the brains in a large measure for the counteraction of this great economic movement which has set in in the United States and it is only as you can learn to produce more pork for the same money and more corn for the same money that you can counteract this great economic tendency and get things on a better basis. Our American people have to learn something about economics but we have to produce more for the same outlay and economize on the other end in order to restore the normal condition of American life.

And so I am especially glad to welcome men who have the means of improving the live stock industry.

I stand before you in rather a mixed role. I happen to be mayor of the city of Des Moines by accident. My life has been in the role of school master but I have been a stock raiser and I have never passed a happier time in my life than in raising Poland China hogs. I cannot see how a man can raise a hog and not fall in love with it. I often wonder how a man can love a red hog but I remember that the parents of deformed children love them best of all.

I do not think I have anything of interest to say to you such as one of the subjects on the program on how you can raise six cent pork on fifty cent corn. That does not interest me half as much as raising five cent pork on sixty cent corn and I think that is the problem we have to meet and I think it can be done. I used to have just one principal rule as a hog raiser and that was to start a pig to the pork barrel as soon as he was born and then he was ready for the pork barrel as soon as was old enough to go there. It is a great problem and it is only as the farmers and stock raisers can mingle all the old hard-headed common sense with all the wisdom that the schools can give us that we can solve the problem. I was a farm boy and supposed I knew how to raise hogs. I taught school for fifteen or twenty years and then I went back to the farm and tried to raise pigs and hogs and made a complete failure of something I supposed I knew everything about. The fifteen years had made the difference. I had never heard of black leg when I was a boy and the first thing I knew it got my herd. But I had the advantage of a business education and some business experience and had caught the scientific spirit from my college education and while the hard-headed common sense of the farmers around me gave them the advantage at first I found in three or four years that I had the advantage of them. You have come up largely from the standpoint of the farmer, just exactly opposite from me. I had grown up as a farm boy but when I went back I had lost all the practical common sense and I made a complete failure. But again, I had got, as I say, the business training and scientific spirit and while I had to learn the particular application of the scientific principles. I set about to do that and in the course of a year or two I could compete pretty well with my neighbors and even some who had been at it a good many years but had not the advantage of a scientific education and I could give them some pointers. I believe that the combination of the theoretic with the old-fashioned, hard-headed common sense must be made in order to bring this thing up on the proper basis to contend with the hard competition that has set in in foreign business and life in general in this country and solve the problem before us.

I don't believe anybody realizes how great a problem it is of solving the high cost of living. There are a great many reasons for the high cost of living. For instance, some men tell us it is buying automobiles. When you take a hundred thousand men and put them to doing a cetrain thing you have to feed the hundred thousand men and it puts that much bigger task on society. We have set aside one class of men to build automobiles and another set to steer our men to Canada and the Dakotas and those men make just that much more burden on society to feed and clothe. As society evolves and sets aside these men you always have a larger and more complicated problem on your hands and it becomes all the more incumbent on those who do the producing to keep the production on the same basis as it was before. We have expanded railroads and built thousands of miles of railroad but did you ever think how it tends to make the nation poor for a time? Just take your own problem. Suppose you want to build a barn. You think in ten years you will need a barn twice as large and in order to save you will build a great big barn and you are poor for two or three years. It is just the same in the life of a nation. When we undertake to do the many things we are doing these days we do make ourselves poor for a time. It is just what the United States is doing today and this problem from every point of view, the statesman, the laborer, the farmer and the stock raiser, is one of the hardest problems and I believe the largest part of the burden is on the shoulders of the stock raisers. But there is nothing quite so potent as the change in our economic life in this country. I am very glad to welcome you to the city because of the fact that I feel it is out of such means as this that the intelligence must come that is going to solve the great problems."

President H. F. Hoffman, Washta, Ia., responded to the mayor's talk as follows:

"In response to the remarks of the honorable mayor I will say on behalf of the Iowa Swine Breeders' Association that we thank him for this welcome and we thank him for the talk he has given us and the complimentary remarks regarding our industry and live stock business generally. We appreciate the generous welcome and the courteous treatment accorded from this city, not only at this meeting but every meeting heretofore. We have met with a generous welcome and such courteous treatment for so many long years that we consider we have a standing invitation when the time comes for the meeting and we come right along confident that we will find the latch string on the outside and a hearty welcome from the city. These are the things that bind us to this city. Many other cities, perhaps, would be glad to have us hold our meetings there but we feel that this is our natural home. We are also under obligations from the fact that the hotels have at many times opened the doors of their parlors for our sessions without money and without price. We have never been compelled to hold our meetings in the rain or the sun but have always found a place ready for us.

There is another class of private enterprise in this city which I think is worthy of our serious consideration, private enterprises which have worked in season and out of season, never letting an opportunity pass to speak a good word and aid us. I refer to the agricultural press of this city. The editors of the live stock journals have always helped us hold our meetings and they consider themselve a part of us, as indeed they are. I doubt if any of us know the relation that exists between the live stock journal and the live stock breeder. Our interests are mutual. It is frequently said that we ought to cut the live stock journals out but this would be a foolhardy policy. It is possible that we could live without them or they without us but the advancement is very slow in both cases and if we work together everybody concerned is bettered. I will say this, that they have learned that in order to help themselves they must help us; that in order to build up their industry they have to work and hustle and make themselves of use to us or go out of business. When we all take that principle that united we stand, divided we fall, sink or swim together, the industry will be conducted on pleasant lines for everybody concerned.

We are here in the capacity of swine breeders at least three times each year. We have our organization in the winter and our great state fair besides the old Swine Breeders' Association and the meeting of the national association of expert swine judges. And this costs quite a good deal of money. Those who live in remote parts of the state cannot come in less than three days. Why do we sacrifice our time and money so many times a year? If I was to answer this question I would do it by asking another. Why is it that Iowa stands so far ahead of any other state in numbers of swine produced and in price obtained for them? When it comes to the exhibition of swine Iowa stands second to none. The greatest hog show is held in this city. It does not come spamodically but every year. We know it will be here. Why are these things? They are in the nature of results. It is just the same as when it gets dark when the sun goes down—it is the law. In order to produce any finished product we have to have the raw material. We have the raw material. Hogs and corn go hand in hand. For the profitable production of hogs the creator endowed the state of Iowa and the neighboring states better than any other place in the world. The creator is not dealing out to us at the expense of the world—other places have things which we may not have but along this particular line he mapped out the state of Iowa and surrounded it with environment necessary to the profitable production of corn and consequently of hogs.

The scientific man says don't feed too much corn, you need something else to go with it, and we do need something else and we have it. We have the clovers. That is the reason we excel, because we excel in the raw material to make the finished product. The people of Iowa are no more intelligent than other people but we have the raw material. We don't have to pay railroad fare or tariff, we have the material right here. We have made a rapid advance but there is probably more ahead of us than behind us.

I want to ask you this, what has been the most potent factor in the development of this industry? There are a good many things that have contributed but I believe you will all agree with me that the most potent factor has been organization. Men have groped in the dark for years and years and had to learn by years of experience. One might learn something along the line of feeding, another along the line of breeding; they get together and tell each other what they found and that was the beginning of organization. Today there is not a state in the corn belt that has not its organization. We have three and we are very glad to have them. They are doing a complete work and why is it that they can do this great amount of work? For the simple reason that they co-operate. They are all working together for the common good just like the cogs in a great machine. We are all glad that this is true and there is no rivalry among them. I can hardly resist saying that this organization is the mother of them all, the one that has made the others and it is proud of them.

I am glad to see so many here today and I only wish there were more, especially the young men. We want the young men to come and get all the knowledge they can out of these meetings. It is said that experience is a good school but none but fools attend. That is true in a certain sense. But you can do this, get the benefit of these meetings. Take a course in college if you can but if you cannot, do the next best thing, get the bulletins from the experiment station. They are published by men who make the tests and who know what they are doing. They are not guessing at it, they know what they are talking about. Get all the benefit you can from other people. There are certain things in this world, however, that are never discovered except in the rough school of experience. Any man who makes a success in this business bears the color marks of experience."

Following President Hoffman's address, Dr. W. B. Niles, of the United States Bureau of Animal Industry, gave some interesting information on the subject, ''Prevention of Hog Cholera by Serum Treatment.''

"The subject of hog cholera is an old one which we have frequently discussed. I have appeared before you once or twice before on this same subject and if you have kept track of what I have said I don't know as I have anything new to say on this question. Great progress has now been made and it is exceedingly interesting.

To go briefly into the history of the study of hog cholera I might say that the department of agriculture soon after its organization began the systematic study of the question. Secretary of Agriculture Coleman, before the bureau was organized, appointed a number of veterinarians to study hog cholera. They visited different parts of the United States and came to the conclusion that hog cholera and swine plague were one and the same disease. The investigation continued for some time. In 1885 one man then in the bureau announced the discovery of the germ which was the cause of hog cholera. At about the same time he announced a second germ which he claimed to be the cause of swine plague. I might say at this point that at the present time we make very little mention of swine plague. We have come to believe that the disease which kills hogs in large numbers in herds located in different sections of the United States is what we have called hog cholera. I do not use the term swine plague.

After the discovery of this hog cholera bacillus the bureau continued its investigation and began preparing serum from the horse. They were trying to see if they could not find some method of vaccination from the blood of the horse and I will show briefly that these experiments did not turn out satisfactorily. The further study of the disease by the bureau showed that a hitherto unknown organism was accountable in part for the disease, it was not due to the hog cholera bacillus alone. We could very readily understand why our serum made from the blood of the horse failed to save the hog. We were not on the right track. We learned that some unknown organism was present and what it may be we cannot learn. We cannot cultivate the true germ of hog cholera but we know there is something else accountable for the outbreaks.

Taking a new start, it was found that the animal recovering from hog cholera did not take a second attack and was immune. This lead to the discovery that if this immune hog was injected with a large amount of virulent hog cholera bacilli it could be made hyper immune. That brings us then to the question of a preventive serum. I will describe how this is prepared. We start with an immune animal. Then this hog is treated with a large amount of blood direct from a cholera hog. (In manufacturing this serum we get this by making a healthy hog sick.) After so many days we draw blood from this hyper immune hog to obtain serum. We bleed the hog from the tail on a certain day. One week later we bleed again and continue this until we have four or five bleedings. These are mixed together, constituting the total serum product from this animal. When this is tested and proven it is ready to be used. It is simply nothing more nor less than blood from an immune hog made hyper immune.

As you are all aware, a large number of nostrums have been advertised as sure cures of hog cholera. But I want to say that not one of these preparations have stood the test. Some are used with apparently good results but when tested further they have all failed and there is no known drug so far discovered to cure or prevent hog cholera. The only successful method is by hyper immune serum.

Hyper immune serum was first used in 1906 at the bureau station at Ames. It was tried in a limited way on a few susceptible animals. We were not able to go into the country that year but we made preparations to do that in 1907. Fortune favored us very much in 1907. It was late in the season before we had obtained sufficient serum to go out but along in September cholera became very prevalent in Story county within reach of our station and it was exceedingly virulent. We found also that the farmers were more than willing to co-operate with us in making the experiment. They turned their herds over to us knowing that there was no other successful treatment. We went out and treated something like fifty herds under natural conditions. In treating that many herds of course we had a variety, some were small, some large, some ordinary, some thorough-bred breeding herds which had the very best of care and they were located on different farms and kept under very different conditions. I will call your attention to results in a few of those herds.

I wish to show the mortality in some of the untreated herds. As soon as the farmers in that district learned that they could arrest the disease in their herds they all came after us. There were, consequently, a great many herds left untreated as we could not go to all of them. One herd for example contained 205 animals and only eleven survived. In another herd of thirty only eight survived; in a herd of thirty-five six lived; in a herd of thirty-seven three lived; one herd of 100 all died; in a herd of thirty-six three lived; in a herd of twenty-four six survived; in another ninety per cent died. That was about the proportion of surviving animals in herds all over the country where the disease was present. It does not always appear so virulent but that year it was exceedingly so. These herds fairly represent the fatality of cholera that year.

Now I will show you the results in a few of the treated herds. One man living near Nevada had lost nearly his entire herd. I did not hear of it until nearly all his herd had died. Then I went to see him and he said he would be very glad to purchase a few shoats if I would vaccinate them. He purchased thirteen. Ten were treated with our serum. The three remaining were left untreated. The thirteen were shut in the hog house with the remainder of his herd—he had a few lingering cases. The three were simply left to see if there was enough disease left to communicate. They began in a short time to show the symptoms and they finally died. The ten treated shoats ran with them but remained well. Of course all the neighbors heard of that, thought it was a very good experiment and everybody began coming up to see if we could treat their herds.

One of the next herds was a herd in which disease had existed for some time but in which a large number of animals still lived. When I visited the farm on the day I started the experiment I found that one or two of the old animals had died. The majority of the herd were shoats.

He had a lot of fall pigs which showed the disease quite severely. I selected fifty-one head for the experiment which, as near as I could tell, were in fair condition. It was impossible to tell, without taking the temperature of each animal, whether they were all well but fifty-one of the better ones were selected. Then to show as nearly as possible what might be the result we divided the fifty-one into three lots. Two-thirds were treated and one-third were left untreated, making thirty-four which were injected with the serum and seventeen left untreated. They were then turned into a clover field where they had principally green clover for feed with access to a little corn in the field. Of the thirty-four treated with serum six died. Of the seventeen left untreated fifteen died. The other two survived. The disease had obtained a good start in this herd and the fact that nearly all the checks died shows that most of the herd would have died if they had not been treated.

In another herd containing thirty shoats and three old sows with litters, which we supposed was an entirely well herd, we intended to treat only the older hogs and simply leave the suckling pigs for checks to see if the disease got on the farm. However, one of the shoats was taken sick, and a few days later died. One of the old hogs also died. Of the twenty-nine injected twenty-eight survived and of the three old hogs two survived. The suckling pigs all died. That was an exposed herd, as shown by results, although disease was not apparent on the day of treating the herd.

One of the most interesting herds we had was herd No. 6. I found one of the hogs somewhat dumpy. The next day when I went back to the farm and found the hog still worse but not showing sufficient symptoms so one could diagnose hog cholera. I treated sixty-seven shoats for this man, all spring shoats weighing from fifty to seventy-five or eighty pounds. Twelve of the bunch were left untreated as checks. You understand that if we had treated the whole herd it might have been hard to find out if they had the disease. In these experiments where it was necessary to have the checks of course the farmers regretted losing the checks but in most cases were well satisfied to save a large per cent. Now that you can obtain the serum it is not necessary to do this. In herd No. 6 of the sixty-seven treated sixty-four survived. Of the twelve animals untreated eight died, two others recovered in a very poor, stunted condition, and the other two survived in fairly good condition. So we really saved two of the checks while out of sixty-seven we saved sixty-four.

Herd No. 9 was very similar. In this herd on day of examination two shoats in the lot showed some indication of the disease, were a little droopy and did not come up to eat with the others. There were thirty-five shoats in this lot. Thirty of them were injected, including the two sick ones. Five were left as checks. In addition two old sows were given treatment. The five check animals died. The two animals sick on day of treatment also died. The rest of the herd remained well. That was a most interesting result, showing that the well animals treated in the herd survived while the sick ones did not live.

On herd No. 14 we planned an experiment to show what could be done by treating a herd before disease appeared. We planned our work that fall so as to gain information on several different points. We wanted to know what could be accomplished in a sick herd by the use of hyper immune serum. Again, we wanted to know if we went to the farm before disease appeared what could be done. Still again, we wanted to know whether after disease appeared in a given neighborhood, could we keep it from extending over the entire country. Incidentally, we wanted to learn whether we could vaccinate old hogs, shoats and pigs successfully or whether we could only successfully vaccinate shoats or whether we could vaccinate all ages. We knew very little about the dose also. We might give too little or too large a dose and we wished to gain some information regarding it. In the experiment on herd No. 14 then we wished to learn if we treated this herd while it was well if we could prevent disease appearing later. There were twenty-seven in the herd. We vaccinated twenty of them and left seven untreated on October 16. No disease appeared in this herd until November 20, a little over a month after treatment. On November 20 one of the check shoats appeared slightly sick. On account of the distance we were not able to visit the farm again until December 18. At that time four of the checks had died and two others were sick. The seventh had been butchered by the owner. Eventually the seven hogs all died, or the six, the one having been killed. None of the treated hogs were sick. We thought we had in this experiment an illustration of the fact that if the herd was treated before disease appeared they would not sicken. There was disease in the neighborhood and the seven had contracted it by its being carried to the farm from some other place.

One of the most interesting herds to me was No. 32, a herd of pure bred Durocs. Some of my Duroc friends may suppose that Duroc hogs do not contract hog cholera. I might say that they are a little more immune than others. All breeds will contract cholera but there is a little difference in susceptibility. This herd consisted of spring shoats, old sows and young pigs and I had an opportunity of vaccinating animals of different ages. We had very little serum at this time but I made a survey of the laboratory and got together enough serum to treat the herd. When I visited the farm I found marked evidences of hog cholera. He had a bunch of male animals which contained a number of sick ones, then a large number of young gilts and a few old sows with young litters. Of fourteen male animals treated two died. Several of these were quite sick and a few developed symptoms of disease after treatment. Some of these animals received treatment from the fact that disease was already present. We do not recommend our hyper immune serum as a rule when disease is present but I will say that in a number of instances it has been found that animals with a mild form of disease will recover. In the fourteen male animals treated only two died, while some of the others had a mild type of disease and recovered. Out of the thirty-eight gilts treated three died and of the twenty-seven untreated animals only five survived. Of the old hogs all survived except the old sow left untreated as check. In the experiment of suckling pigs part of each litter was treated and part left untreated. In two litters eleven pigs received treatment. These all lived. In the same lot eight were left untreated and all died. We had the same result in two or three other herds where young pigs were treated. One of the questions I am asked at the present time is whether we can successfully vaccinate young pigs. I will say that you can if they receive a sufficiently large dose. They require a larger dose in proportion to the older shoats.

I will mention one other herd and that was one in which the owner wished to try one of the commercial vaccines. We had very little serum left at that time but he wanted me to come over and try the government serum along beside the commercial vaccine which he had bought in Chicago earlier in the season. I vaccinated sixteen. All survived. Of thirty-one treated with the commercial vaccine only six lived. He didn't have very much faith after that in commercial vaccine.

I will not stop to give you a summary of all the herds treated but I will say that when we began treatment in a herd in which disease had just appeared we practically saved all of the treated animals. We saved all except those actually sick when we began and in some cases we even saved some of those. You can look them up in the reports. All of our experiments will bear me out when I say that if you go into a herd attacked by cholera early that you can save practically all of the animals not sick at the time of treatment. If you go in later, the same holds true but of course there is a much larger per cent already sick. The only way to tell definitely how many of the herd are sick is to take the temperature.

We found also that where we vaccinated the herd early before any of them were sick that the disease did not appear later. In the experiment where we wished to learn whether we could stamp out disease by vaccinating around the sick herd we found that the disease did not spread and we have reason to suppose that we did a great deal toward preventing the spread of the disease. By treating with hyper immune serum at the first outbreak you can stamp out the disease and I do not believe there is any necessity of the disease extending over the country as it has in the past. We have found that we can vaccinate hogs of all ages. We gained also some idea with regard to the dose. We have fixed a standard dose.

Since 1907 we have made other experiments and the different states in co-operation with us have made the serum and gotten the same results as our bureau has obtained. Since 1907, the main work has been to assist the different states in getting started. Secretary Wilson and Dr. Melvin thought the field was too great for the bureau to manufacture sufficient serum for the farmers of the United States so they endeavored by all the assistance they could give to have each state take up the work itself and I am very glad to say that most all of the swine growing states have done this. The different state experiment stations or veterinary boards were invited to come to Ames to find out what we had done.

They came and we showed them what we had accomplished, and they were able to start from where we were and did not have to work it out for themselves. All the states mentioned below have done more or less along the line of serum manufacture: Iowa, Minnesota, Illinois, Indiana, Ohio, Nebraska, Kansas, Oklahoma, Texas, Missouri, Arkansas, Kentucky, Tennessee, Delaware, New York, Pennsylvania, Michigan, North Dakota and South Dakota. Some have made quite a large amount of serum and I am glad to say that every state has had results similar to our own. Every state has made good serum and has been able to go out and cut short the disease. Dr. Koto has a serum plant almost ready for operation in the suburbs of Des Moines and would be glad, I suppose, to have you visit it. I do not know what his method of distribution will be but the state of Iowa has made an appropriation and put it in charge of Dr. Koto and his plan is to supply the serum to Iowa farmers at actual cost. In many states it is distributed free of charge.

This is the situation at the present time. There is no question whatever but that by the use of hyper immune serum hog cholera can be stamped out. If you will write to your congressman you can get a copy of the twenty-fifth annual report of the Bureau of Animal Industry and in it you will find the treatment of the fifty herds described and a number of other articles which you will find of interest."

The doctor then read the plan for stamping out the disease as outlined by Dr. Melvin and published in a bulletin of the Bureau of Animal Industry.

In discussing this subject at the close of the doctor's address C. R. Moore, of Kellerton, Iowa, asked: "Do you notice any ill effects whatever from the vaccination on the hog?"

Dr. Niles replied to this as follows: "I did not bring out the fact in my talk that there are two methods of vaccination. It has been found that the use of the hyper immune serum brings about only temporary immunity. If during this time the hog comes in contact with a sick hog he will acquire lasting immunity. In order, therefore, to immunize an animal for life we use with the serum a small amount of diseased blood. It is possible in such case that the hog will sicken. In stamping out the disease it is not necessary to use anything but the serum alone without the diseased blood. You will find that in very rare cases there will be disease started but there will be very little loss. It depends upon circumstances which vaccination you use. Serum alone cannot start disease. The other might do so. However, when the herd does not sicken they are not stunted and do nicely afterwards. There were a number of thoroughbred herds in the tests which we made and they did well. I don't know what Dr. Koto's method will be—serum alone or both. I am asked sometimes if when there is no cholera within two or three hundred miles of a herd if it should be vaccinated. It is not necessary until it is somewhere near about. If I was going to the fair I would do so. I think some states make it compulsory and it is certainly the proper thing to do to vaccinate them before they go to the fair. We were called upon to do this before going to Kansas City and to the International. Probably the same will be true in regard to the state fair. I would not consider it necessary to vaccinate a herd of mine unless disease was somewhere near or I was going to the fair or intended to introduce other hogs into the the herd. We don't need to vaccinate just because we can but we do need it if there is any danger.''

F. B. Butterfield, of Polk City, Iowa, asked: ''How long does vaccination last?''

Dr. Niles: ''The serum alone only lasts a few weeks but if the double vaccination is used as far as we know it lasts during the life of the hog. With the serum alone if they are exposed to the disease too they acquire lasting immunity because they get the disease along with it.''

H. S. Allen, of Russell, Iowa, asked: ''Can any person vaccinate his own hogs, and if a sow is vaccinated with a double vaccination while carrying a litter will the litter be immune?''

To which Dr. Niles replied: ''They have a little immunity but not entirely. I have found that while they develop the disease it is not so active. By breeding animals which have been through cholera you can get animals with a little immunity but not enough to make it practical. I would be glad if Dr. Peters would answer the other part of the question.''

Dr. Peters: I am indeed very glad to be with you this afternoon and hear this discussion because I was present here some years ago and discussed this subject with you when we were making the serum from horses. At that time we did not know, as Dr. Niles says, the mysterious feature about the virus, that there was something in this blood that still produced the disease. Dr. Niles and myself could entertain you for a long time in discussing some of the methods we are still pursuing to cheapen the product and this organization should be very proud of the work Dr. Niles has done. It was through his painstaking work that this work has been brought out and recognized, not only in America but throughout the entire world. If you were traveling abroad that would be one of the first things the scientist would say to you, the wonderful work accomplished in hog cholera. As to vaccinating your hogs yourself, I do not believe it is well for you to do so unless you have gone through a course of training. I do not want you to understand that I want to create any worke for the veterinarians but the work should be done accurately and you can only do that with a corps of trained men. Illinois and Nebraska are furnishing this free of charge and I understand that Iowa has not done so and I am very much surprised that it is not taking care of its hog industry by appropriating sufficient money to do this. It should be done by the state and done thoroughly. If hog cholera appears in a certain portion of your county that herd should be immediately quarantined. You should not have any fear that it is going to reduce the price of your hogs. It is simply to keep the other farmers away.

Dr. Peters in taking up the subject assigned to him, ''Preservation of Health in the Herd,'' presented it as follows:

"This question of taking care of the hog is one of my hobbies. We have many diseases that we should take care of and prevent. One of the diseases that you should be careful of and one that is spreading throughout the country to an alarming extent is that of internal parasites in hogs. That disease among hogs has increased to such an alarming extent that the United States government just about a year ago put a man on for the inspection of hog lungs. Ten years ago we were practically free from that trouble. Our herds are beginning to be more and more infested and it is due to the fact that we have not given it enough attention. There are very few breeders in the country who use the precaution to quarantine against parasites, or when they buy hogs and put them on their farms to see if they are infested with parasites. I think you should use the same precaution as you do against cholera. The up-to-date man will keep them in quarantine for some time. Let me explain why. The parasite passes through with the faecal matter and passes along the water troughs and feed troughs and is taken up again with the food and the animals become re-infested. The eggs of these parasites pass out by the hundred and it takes but a short time for an entire herd to become infested with this disease.

Now, what can you use? You can use salt and ashes in equal portion, added to air slacked lime and one-fifth copper sulphate, and you will have a very good powder. This powder should be kept before hogs all the time. It should be kept in a self feeder. It is one of the best condition powders. If hogs are badly infested it is best to give coal tar creosote or a weak solution of carbolic acid. Give a one per cent solution of carbolic acid, that is one part of carbolic acid to ninety-nine parts of water, an ounce on an empty stomach, or two parts of coal tar to ninety-eight parts of water on an empty stomach. It is just strong enough when the animal drinks it in a thin slop to kill the worm and in from five to six hours the worms pass out.

The worm we have to deal with in the hog the most is the one that is found in the mucous membranes. It has an entire set of suckers and they go right into the skin of the abdomen and take out a lot of blood. The solution is just strong enough so that when it goes into the body on an empty stomach they release themselves and pass out. The powder has to be given continuously so that by keeping the bowels free they will pass out and the eggs don't mature.

The next question is that of having hogs free from lice. Most breeders have got wise to that and yet it is surprising how many men do not take care of that one point and keep their hogs clear of lice and nits. These lice are blood suckers and adhere largely where the skin is thinnest, around the ears and on the abdomen, and do a great deal of mischief. You can dip or you can spray. Dipping is pretty hard work, especially if you have not your dipping arrangements made so that it is practical. If you have a dipping apparatus, get it so that it is winding so that the hogs cannot look ahead because you know hogs are pretty stubborn. It is tiresome work to keep poking them along and they won't go. You can make a dry battery which costs but little. Buy a cord and attach it to your battery. Have a little end sticking out and all you have to do is to poke Mr. Hog and he will give a jump. It will keep your temper much better and you will get good results. It is the easiest thing in the world to get a good hog out of order.

You may ask me what is the best dip. At the present time I am using crude oil, about an inch to an inch and a half on the water. Then I have a number of rubbing posts on which I used crude oil. I like it because it has a more lasting power than any other dip and it is the oily effect that you want. That gets the nits. The first dipping will kill the lice that are on the hog but it is the second crop of nits on the hair which will hatch out in ten days that you want to be careful about. This oily stuff will prevent these little nits from cropping out.

While you are going to all this trouble of dipping there is one thing that you want to bear in mind and that is if you have any rubbish lying around your hog house, that is just what you want to burn up. They are full of lice. You don't want to take a day off dipping hogs, probably injure a good hog and feel bad about it for two weeks afterwards every time you think of it, and then not remove the cause. Know the cause and then remove it.

I believe in feeding the hogs. We have found in this serum work that by giving our hogs special rations we can secure a great deal more blood even in the winter time and we know that some other stations have gone out of business in the winter time. The different stations have shown that by feeding balanced rations that they can increase the breaking qualities of the bone. That is important you know. You will agree that if you can increase the breaking quality from 800, which is the average, by just adding some little food to it, to a breaking point of 2,300 to 2,600 it is quite a difference. You will grant that if you can do that that the animal ought to have more resisting power. From what I have worked out I do believe that they would have more natural immunity and would be stronger to resist disease.

I am asked many times if tankage is not made from all the diseased hogs. It is not made from the diseased animals from the packing house. The diseased animals found in the packing house are under the supervision of the government inspectors and they are made into fertilizer. Tankage is somewhat dangerous to feed to hogs. If you are not careful you will over-feed because it is too rich and you will have a disease among your herd in a very short time that resembles hog cholera. You can get them off feed in three or four feeds if you are not careful.

A great many people lose their hogs during weaning time and right after farrowing time. Every now and then we read of a great loss among hogs, the little pigs dying within two or three days, possibly four days after farrowing. Two years ago we had a great loss and it was due to the fact that we had a very wet season, and these hogs coming just at that time they got into a bed that was damp. This often happens. If a sow be allowed to farrow in a damp, wet place, the little hog will become infected in the naval. The little fellow might have been a chubby little animal but you will find him thin and he won't eat and a yellowish discharge comes from him. Some say it is too rich milk, but I think you will find the infection comes from a damp, bad bed and it can be prevented. If you have one of the rainy seasons just tie the naval of this little hog and disinfect it and you will have no trouble. That is worth a great deal of money to you. The other part of it is the weaning. The average farmer does not have the right method of taking the sow near a great pasture so the little fellows gradually wean themselves and that is where we have another great loss.

Another feature is that the little fellows will have an infection of sore mouth. It occurs either on the upper or lower jaw. I believe the feed of the animal has a great deal to do with it. We find that it comes from a peculiar germ and if we place it on the jaw of another animal we can infect it also. But if you take those animals immediately and wash the entire infected part with a good solution or strong disinfectant you can save them in a very short time. It might be due to injury such as the too sharp teeth or fighting but I want to say this, that if you have the trouble get after it right away. If you are going to neglect it you will find it will go through your entire litter. Not only do you want to disinfect those animals but you want to separate them into a little pen by themselves to avoid having your entire hog house become contaminated. If you will do that you will get rid of it but it will mean a lot of work. If the animal is not worth very much, in order to save the others it is well to sacrifice the one. It is quite a troublesome thing and you have to keep after it every day.

In cases of sore mouth the udders of the sow will become infected and should be washed and disinfected every day. I have had good success with carbolic acid or dip but you have to keep after it all the time."

"The lung worms are pretty hard to handle. I think there is nothing better than turpentine. Turpentine is so diffusible that it goes through the entire system quickly. It may be a little hard on the kidneys but it is the only thing that will go through the lungs. If all breeders and farmers would treat their hogs that are affected with lung worms in that way and quarantine them we would soon get rid of it. Hogs infested with lung worms will stand and cough. They don't do very well but you won't lose any of them. They don't have the tucked up condition of the flank except in the latter stages. They will put on some flesh but they will not have the real bloom that you desire and you will find the lungs entirely infested with little thread worms. Two or three years ago we did not really believe the intestinal parasite had much to do with the animal or really injured the animal. We are beginning to take more notice since Dr. Styles down in the south has said so much about the hook worm. You will find people there infested by only a few parasites but they will develop a symptom that you can detect them out of many thousands. We have in the west a disease in the intestines among horses. The average veterinarian who has never seen this parasite would probably pass it over and yet you could pick out a little handful that would produce a distressing effect on the horse. So we are just beginning to take notice of the intestinal parasite."

Speaking further regarding the lung worm D. L. Howard said: "I can tell you something that will get rid of this lung worm that is safer than turpentine and that is kerosene oil. As I understand it the germ of the lung worm finds its lodging in the bronchial tube. It hangs onto the walls and creates a tickling sensation which causes the hog to cough. Sometimes the hogs will die but if they don't, they are of a weak constitution. When you are rid of intestinal worms and your hogs still cough, they have lung worms and a little kerosene will dislodge all the worms in the throat. It will not get into the lungs and if there are many in the lungs you will lose the hog. I know of a party in southeastern Iowa who had been raising sheep for thirty years on his farm and that ground got so infested with lung worms that it was impossible for him to develop his sheep so he disposed of the sheep and got forty head of two-year-old steers and in about three months time those steers took sick. He called a doctor and found that it was the same as the lungworms the sheep had."

"Maintenance of Size and Uniform Type," which was open for general discussion was taken up by W. Z. Swallow, of Waukee, Iowa, as follows:

"I think there is quite a bit of room for talking on this subject. I think the Poland China man more than any other breed has had a great deal of experience. For a while they went for a small animal and then the next jump they wanted too big an animal. The medium sized animal is the best I think. That has been my experience for about forty years. Just pick a nice sized animal and go right along. I think there has been just as much detriment done to the breed by picking the big coarse animals as the too small ones.''

Mr. Hoffman continued on the same question: ''There are several ways to maintain size—by breeding, by feeding, and different ways and it is very essential for us to keep guarding against the tendency to grow poor ones. You have to guard against it in your selections. I don't know of any better way to keep uniform type than by following the saying that like produces like. I believe that if we use a sow and a male that are near alike we will produce a more uniform type than in any other way. It is quite a broad term to say size or type. I read an article the other day along this line and I think the man was laboring under a great misunderstanding because he claimed that the fairs and score cards and everything else tended to run down our hogs and make them small. I don't look at it that way. If you understand the score card right you will find you get a better hog, a more uniform and symmetrical hog. I think by feeding and selecting right you will get the best results. I think as Mr. Swallow says, that when a man buys a big coarse hog he makes as much a mistake as when he picks a fine, small one.''

Mr. Swallow gave his ideas further, saying: ''I started out about fifty years ago and I picked my type of animal that I wanted to raise and in selecting after that I always aimed to get something that was as near that type as I could. You want to get as much size with quality as you can and just keep that going right along. That is what I did and I have always had pretty fair luck, especially at the fairs. Keep a good fair sized animal and get stock that will run back pretty near the same size and type as the animal you started with.''

D. L. Howard expressed his views also: ''I think Mr. Swallow's method of breeding is one to follow. Mr. Swallow has made a success of it. As has been stated before, you can get a hog too small or too big even for pork because he will not bring so much on the market for the reason that the offal is greater in the slaughter. I like a big hog myself better than a little one. The big hogs are all right provided they have quality.''

Mr. Harding: I find the trouble with the size business, with keeping the size, is that the tendency has largely been to place ribbons at our state fairs on rather medium or under medium hogs. There is one place where I believe the article referred to by Mr. Hoffman was in part right because there has been a tendency a great many times for the judges to do that. There is another feature to the uniformity of type. You can never keep a uniformity of type in any breed of hogs if you have a man one year who picks a little type and the next man picks the big type because many people will want to breed from the winner and buy from that strain and how are you going to keep uniformity of type when one year you go one way and the next year the other? Every breeder I believe has his idea of what the best kind of hog is and he breeds for that type. I have been always an admirer of a medium sized hog but the trouble is to know what the medium type really is. You can't get a hog too big for me if he has the quality. A big hard feeder will show it in his make-up. But if the hog has other qualities with his size, if he has fineness of build and all those other good qualities with his size, I don't care how large he is. My experience in dealing with the public in general is that about nine out of ten men will say they want a great big hog. The farmer's ideas are not ours. But if he picked the hog himself he would not pick the great big coarse hog. Among the breeders I think there is only one way to get uniformity of type and that is to breed your boars and sows as near the same type as you can.

Mr. Howard: When the farmer who is breeding for pork writes for a big coarse animal he had the sows that are like that and when he gets the big coarse animal he gets what he wants and just what he wants and just what he ought to have. I know farmers who have them. Their method of breeding and feeding don't develop the other kind. The hog that is well built and fits your ideas might not suit his herd. There is a place for these big coarse fellows, with the pork raisers. I never raised them myself.

Mr. Harding: In doing my mail order business I invariably ask a man what class of stock he has. Sometimes they say I know better than they do themselves what they want. But I don't and I always ask a man in regard to his sow stuff and after he gives me all the information that he can I can tell what he needs.

Mr. Hoffman: Do you think it is a good idea to buy a male from the simple fact that he is a winner?''

Mr. Harding: No, I do not. Select an animal bred along the right line regardless of whether he has a premium or not.

W. H. Cooper, Hedrick, Iowa: It seems to me there has been more agitation in type among Poland China breeders than other breed and nearly every man has his fancy as to type. I notice that many breeders of the smaller type in getting up their advertising matter will use the big type demonstration, that is they will word it that way if they can. In order to grow the big type you must have the big type blood lines. I never saw a hog that was too large so long as he had the quality. We have arrived at a time when we have to produce as much as possible with the same amount of material. I have had pigs that actually gained a pound a day from the time they were born until ready to go to market. I think the big type is getting the dollars and as far the type is concerned, I am largely in favor of the larger type but they must have quality.''

C. C. Carlin, Des Moines: ''Type is type and size is size. Size is not type. You all talk about the big type. There is only one correct type of Poland China hog. He may be big but that doesn't change his form. I just wish that nine out of ten of you could go up and take some good lessons of old Peter Mouw. You would find out that you could make big hogs no matter what the blood lines. You would find out that the Peter Mouw blood lines are based on the very smallest strain that the breed has brought to any popularity in twenty-five years. Peter Mouw is a feeder and it is his feeding quality that has made his big hogs and not his ability to breed.

Mr. Yoder: How long has he been getting that size?

Mr. Carlin: I expect that Mr. Yoder would not have asked that question if he had been at the state fair when Peter Mouw was ruled out because his hogs seemed to be too big.

Mr. Howard: I don't agree with Mr. Carlin on Peter Mouw's method. I will admit that Peter Mouw's method of feeding will make any kind of hog bigger. You ask him what he feeds and he says ''not much of anything,'' but when you go into his feed house you will find everything. His little pigs don't look so much better than other little pigs but they come. A few years ago he bought a male from some parties in Illinois and he wanted quite a bit of size and at the same time he wanted lots of quality. The hog came and he fed it for six months to try to bring that hog into form that would be good enough to show. What was the result? He sent him to the market. He used him on a few sows and sent the pigs to the market. The hog did not have size. He has developed some of the size by feeding but not all of it. You could not give Peter Mouw Osgood stuff. He bought one of them once and it wasn't worth fifteen cents. You could not feed that type into a big, useful hog if you had him a hundred years.

Mr. Harding: As to this feeding, I believe to a certain extent he may be right but the Poland China hog with which Peter Mouw started had not got to its small point. He got hold of some of this stock that afterwards developed to be a small type but under his feeding it did not reduce down. At one time we did not have these small ones. They were all big. He got hold of the type before it degenerated.

Mr. Carlin: The question of Mr. Mouw's success is based on the fact that he disregarded size and selected animals that had the promise of proper development. The stuff he started with was not large but by proper selection and the only Mouw system of feeding he has kept it large.

Mr. Yoder: At the state fair one year I had a breeder ask me why it was that his herd header and its descendants were larger than a litter brother and the descendants of the litter brother. I had not thought of that before but I knew the litter and I knew the ancestry and he had the one male in the litter that was the type of the dam and the others in the litter were the type of the sire and the breeding quality was so strong that it had been carried down the line. You want to look to the type you started with. If you do that and then feed the feed will do the rest but it will be hard to feed it alone.

Following this general discussion the paper on the subject, "The Meat Situation," by W. P. Saunders, manager of the Agar Packing Company of Des Moines, was read by the secretary. The paper was as follows:

"Enough has been said already to show that the increased cost of meat is due to the failure of the animal industry to keep up with the increase in the human population. In some areas of the country there has been an actual decline in the number of farm animals. The Texas Commercial Secretaries' association reports the number of cattle in Texas January 1, 1909, to have been 8,794,000, while on January 1, 1910, there were but 5,959,926.

After all the world's elaborate process of reasoning in regard to the causes and conditions of present business affairs, we shall have to go back to the simple act of blaming the farmer, if we want to put our finger on the spot whence comes all the uncertainty and confusion of this spring. It is highly unfortunate, for the average man wants to find a combination in restraint of trade that is doing all the mischief, and the farmer is not a combination in restraint of trade. What are the grounds of complaints and confusing factors of the times? High prices, the tariff, the political situation and the adverse action of the foreign commerce. Perhaps it can be simmered down to the one fact of high prices. Then what causes high prices? A shortage of those commodities which are most needed by human beings. Why is that shortage? Because the farmer has not kept up in the extent of his productions with the increased population. And the tariff is criticized because it is assumed that the duties make prices high, though on an average through the list the present law makes a smaller levy than former protective tariff laws.

The political disturbance comes from the same source, primarily high prices, which the ordinary man must needs lay to somebody and accordingly chooses the politician. The responsibility of the farmer for the balance against the increase in our exports is almost entirely in agricultural products.

The farmer then may be held responsible for the present situation much as the officers of a corporation are for anything that goes wrong with that corporation, though many of the causes of the mischief may have been entirely beyond their control.

This much may be said, however, that the husbandman has not taken as much out of the soil as he would have taken under more scientific and conscientious methods of cultivation, and we have about reached the limit in the extension of our areas. Nor, so far as this country is concerned, is the outlook altogether satisfactory as to any cheapening of farm products. The farmer is working land which has greatly increased in value during the past ten or twenty years. He must get a pretty high price for his product in order to reimburse himself for his labor and also pay interest on the capital invested in his acres. Unless he sees a good price coming for wheat or corn, he will not plant his lands to those grains. How, therefore we are to get out of this knotty situation with lower food prices without a considerable loss to the farmers is a question. It may be that we are on the verge of a great liquidation in farm property similar to those that are so often experienced in the stock market when prices get too high. Thus far there is no evidence of any such event. Prices of farm lands are still advancing, and there is considerable speculation in them. The strain has become so great in this country that many of our people are migrating to the cheaper lands of Canada. One thing is becoming clearer and clearer, and that is that our farm products will hereafter, and until a break does come, cut a comparatively small figure in the export trade, and other fields will furnish the bulk of the supplies to the people of Europe.

Our attention has been called to a recent article in Colliers' Weekly regarding the meat situation. It is worth while to note that the article says that several years ago the packers were restrained from underselling local dealers in some places, thereby increasing prices. The present complaint it seems, from Colliers', is that the packers are not now selling at the excessively low prices which at that time were complained about.

It is interesting, also, to note that the article finds fault with the report of Commissioner Garfield, of the Department of Commerce and Labor, because it clearly showed that the packers were earning only a small profit on their annual sales. It also strangely omits similar statements of Secretary Wilson of the Department of Agriculture, who points out in his current annual report that the increased price of meats is not due to any large profit of the packers. The article alleges that in fifteen years wheat has risen 100 per cent, corn 106 per cent, eggs 204 per cent, butter 150 per cent, potatoes 100 per cent and beans 147 per cent. Collier's does not enumerate meats in this category because according to the most exaggerated figures, beef has only risen about 80 per cent.

It is not practicable because of the lack of space, for me to go into a refutation in detail of the many erroneous and misleading statements in this lengthy article. However, it contains misrepresentations, concerning which the public should be set right. This is especially the fact because in the effort to discover and, as far as possible, remedy high prices, it is distinctly a loss of time to follow wrong scents or to be mislead by unwarranted prejudice.

One of the features of the article is the statement that cold storage creates an artificial level of prices. It is gratifying to note that Colliers' concedes that cold storage actually levels prices—that is to say—makes them the more nearly uniform the year around. It is also pleasant to observe that it explains that perishable commodities are placed in cold storage during the season of plenitude to be sold during the season of scarcity just as Joseph and Pharoah wisely saved the crops of the seven years of plenty for use in the seven years of famine.

But unfortunately, erroneously and inconsistently, the article goes on to say that the cold storage warehouses are employed to create corners and to manipulate fictitious values. This statement should not be made against cold storage as a system. In fact, it is obviously erroneous. Why? Simply because the goods put into cold storage warehouses cannot be held indefinitely. The owners of the products are at an expense for interest and cost of warehousing and besides it is obviously impossible to maintain a permanent corner in any large commodity as it is intimated cold storage men are doing.

The fact is that, before cold storage, the perishable products of the summer season had to be consumed at the time they were ready for use, otherwise they were destroyed by decay. To some extent and as to some products preservation was accomplished in the country by means of cellars and by burying some products in the ground. The cold storage warehouse is simply the improved expansion of this practice. It is the making of gigantic cellars at the great food markets where, during the season of excess supply, the surplus is put away for the season of scarcity.

It is plain to anyone who understands markets and prices that the cold storage depositors cannot buy more than the surplus of summer or they will greatly advance prices against themselves. And—if they buy only the surplus—they can conserve it for the public use for seasons in which but for them and the cold storage warehouse it would probably be unobtainable.

As to the prices at which cold storage goods are sold—well goods must be offered at prices which will attract buyers. Goods in cold storage cannot go on accumulating all the time or the warehouses will burst and also those financing the purchase of goods. As a matter of fact, no wholesale prices for cold storage goods now, in these times of clamor about high prices, is as high as the price of the same articles which prevailed throughout the west at many times before cold storage came into vogue.

Colliers' says that eggs were put into cold storge at from 14 to 16 cents per dozen. This is erroneous as to last year, at least. The eggs that were put into cold storage cost more than 22 cents per dozen. As a matter of fact the wholesale price of storage eggs at no time has been more than 23 to 26 cents per dozen. The margin of profit is small, if any margin at all exists over carrying charges. These figures can and will be verified and proof of them will, if desired, be furnished. Can Colliers' verify the figures which it prints?

But while these and other statements are entirely misleading, the figures offered in the article concerning live cost, selling price and packers' profits on beef are conspicuously untrue. I will quote what Colliers' says on this point—

"For his beef on the hoof the western cattle raiser is receiving 7 cents a pound, or $84 as the price of a 1,200 pound steer. The packer takes his products from the by-products of the steer, amounting to $20 and sells 800 pounds of meat at 11 cents per pound, $88, receiving a total of $108. The combined packing houses of the beef trust sell $700,000,000 worth of meat and products annually, for which reason a small advance in prices yields a vast total."

The first of the foregoing statements is printed under a picture of cattle on a western ranch, giving the reader the impression that the figures quoted apply to the kind of cattle in the pictures, bought on the ranch.

This shows the careless and misleading character of many of the statements in Colliers' article.

To fully elucidate the matter, let us take a concrete illustration. A 1,200 pound steer at 5½ cents figures $65 cost for the animal. The expense for buying, killing, cooling, loading and other items is about $2 per head. The hide, fat and all other by-products at actual wholesale prices average not over $18 per animal. Thus, the dressed beef costs $50 and weighs 665 pounds. Colliers, as stated in the paragraph quoted, says that such an animal as I have described would net 800 pounds of dressed beef, equivalent to 67 per cent of the animal's gross weight. This is 10 per cent in excess of the actual ratio which prevails and which every cattleman knows.

The Germans have modified their regulations with reference to the importation of pork products in that country. It is not an important market factor at the moment, as very few meats could go to Germany at this level of prices, and there is no change in the regulations with reference to lard."

Prof. H. H. Kildee, of Ames, read a paper on "The Profitable Production of Six-Cent Pork on Fifty-Cent Corn Under the Prevailing Conditions." Prof. Kildee said:

Pork production is and always will be one of the chief industries of this state. Corn growing and pork production are always closely associated, yet while Iowa has strong competition for the title of "Golden Buckle" of the corn belt, no one will question her right to the title of "Golden Buckle" of the hog belt. Iowa stands in a class by herself in number and value of swine. On January 1st, 1909, there were 7,908,000, or practically as many as the two states Illinois and Nebraska, ranking second and third, combined.

The hog is king in Iowa, because he is well adapted to our conditions and because we appreciate a good thing. The factors which have made him so deservedly popular are as follows: early maturity, fecundity, economy of production and utilization of by-products.

The profitable production of pork may readily be divided into three phases or stages, which are—the selection of breeding stock, care and management, and proper feeding.

It is impossible to cover all three phases in the time allotted this paper, so I will hastily pass over the first two and spend most of my time on the third phase.

We all realize that there may be as much difference between individuals of a given breed as there is between representatives of different breeds. So while our favorite breeds have their leading characteristics we know that they have their unprofitable as well as profitable representatives. Hence in the selection of the foundation stock for our herds we must see to it that we select the most profitable type from our favorite breed.

The successful hog raiser is the man who pays strict attention to the health and comfort of his "money makers" especially while they are young. It is very essential that they be kept in roomy, sanitary quarters and be kept free from both internal and external parasites.

While it is absolutely essential to the most profitable returns that the foundation stock be carefully selected and the pigs be kept in perfect health, yet the method of feeding is a potent factor in determining the profit. The problem of how much expense, time and labor can be profitably expended in preparing feed for swine, is one of importance, and one which is rapidly being settled.

Experiment station workers are practically unanimous in concluding that cooking not only does not increase the profit, but that it is often a detriment, as the heat renders some of the nutrients less digestible. It was formerly thought by many that it was a paying proposition to grind corn for all classes of swine. This idea has been exploded and the Iowa Experiment Station in a series of experiments with a large number of animals found that for spring pigs during their first summer and fall there was a saving of over six per cent. of the corn by feeding in the ear instead of shelling and soaking it and a saving of 18 to 24 per cent. by feeding in the ear instead of shelling and grinding it. With the older animals there was a small saving of corn by shelling and soaking it twelve hours. In all cases where there was a saving by grinding there was a greater saving effected by simply soaking the shelled corn twelve hours in water. Extreme early maturity can best be secured by shelling and soaking the corn. A combination of rapid and economical gains can best be secured by feeding dry ear corn until the hogs are close to 200 pounds in weight. For hogs above 200 pounds soaked shelled corn while a trifle slower than soaked corn meal made the most economical gains. In reporting these experiments in bulletin 106 of the Iowa station, Professor Robbins states that to have ground the corn necessary for our 7,908,000 hogs would have cost at least $3,000,000 per year. As the average weight for all hogs sold on the Chicago market for the past five years is but 222 pounds, the bulk of our hogs go to market ere they pass the size at which feeding dry ear corn gives the best results.

To make the greatest profit out of swine it is necessary to produce gains cheaply. This can best be accomplished by furnishing plenty of forage. We are just beginning to appreciate the value of the various forage crops. At the Iowa Experiment station we have found that clover is much superior to timothy and blue grass and in our work made a trifle better showing than did alfalfa.

By comparing results from a check lot of pigs fed corn and meat meal in a dry lot it was found that an acre of clover produced about 750 pounds of pork. The feed and pasture per 100 pounds gain costing but $3.50 from the time pigs were weaned until they weighed about 225 pounds. There are many crops which may be sown in the spring and make excellent pastures. Some of these are rape; oats, rape and Canada field peas; oats, rape and vetch; and oats, rape and clover. An acre of the last named combination produced 830 pounds of pork exclusive of the pork produced by the feed given.

In addition to supplying an abundance of green feed during the summer it is a paying proposition to grow soy beans, cow peas, Canada field peas, vetch or rape with corn in a field near the buildings to run the pigs on during the fall. Excepting the rape these crops can best be put in with drill immediately after the corn is checked and thus they will be nearly ripe when the corn is ready to turn into. Gains made by pigs on corn with soy beans or cow peas have been found to be not only much more economical, but a trifle more rapid than those made by pigs in a dry lot fed all the corn and meat meal they would eat. An acre of corn and soy beans produced 619 pounds of pork at a cost of $2.38 per 100 pounds while gains made by similar hogs in a dry lot fed corn and tankage cost $3.74 per 100 pounds.

Iowa farmers are beginning to realize the importance of dairying and that the two classes of stock which make an especially profitable combination are dairy cattle and swine. Skim milk and buttermilk make valuable supplements to use in conjunction with our corn ration and where pigs run on good forage and receive one of these in conjunction with corn the economical production of pork is assured.

While absolutely essential to economical production in dry lot feeding, it is not necessary to feed a very large amount of the various sources of protein to pigs, on forage crops which receive skim milk or butter milk.

While there are many nitrogenous feed stuffs on the market, the bulk of experimental data as well as practical experience is very favorable to the packing house by-products as a profitable source of protein to balance the corn ration, either in dry lot feeding or when the pasture does not furnish sufficient protein.

Six cent pork can be produced at a handsome profit under prevailing conditions if proper use is made of forage crops and dairy by-products.

Experiment station work shows that a bushel of corn when properly fed will produce 12 to 14 pounds of pork, hence when hogs are six cents per pound we are getting about 80 cents per bushel for our corn. I am firmly convinced that no farm yields the largest possible returns which does not have a lot of well managed, properly fed swine."

Geo. T. White: I would like to ask Prof. Kildee a little more about the combination of corn and soy beans.

Prof. Kildee: I will say that the soy beans are a crop that need warm soil so we put them in with an early maturing variety of corn. Last year we put them in along the first of June and this year about the 20th of May. The corn was checked in and then we drilled the soy beans right down the row. The vines grow very rapidly and crowd out the weeds. We are comparing this year corn and soy beans and corn and Canada field peas.

Mr. White: About what amount of seed do you use to the acre?

Prof. Kildee: About three stalks of corn to the hill and the peas at the rate of half a bushel per acre.

Mr. White: How would it do to mix the corn and peas in the proper proportion? Would the peas go to the bottom?

Prof. Kildee: I think likely they would. We have not tried it. It does not take long to put them in as we did and you have a good crop of corn.

Mr. Hoffman: Have you ever tried raising the soy beans alone?

Prof. Kildee: No, not as yet. Some people have secured very good results, especially down in Missouri, putting them in late and then turning in the hogs and getting the forage as well as the beans, but we have not tried that here.

Mr. Hoffman: We have put them in and used them for winter feed. I understand a pound of soy beans would equal a pound of oil meal.

Prof. Kildee: Practically so.

Mr. Hoffman: How do your soy beans and cow peas compare?

Prof. Kildee: There is not a great deal of difference in the economic gain, but we secured somewhat better results with the soy beans. In the case of the peas there are more vines, but fewer pods. There will be fewer peas than beans.

Mr. Hoffman: Did you get better results from clover than alfalfa?

Prof. Kildee: I would not say that our results would stand forever. We had two lots of each. We secured a trifle larger gain on clover than alfalfa, but it was just one year's work and should be checked over. The pigs on the clover did better than on the alfalfa, but in the fall the alfalfa stayed green and the animals did better in September and early October.

Mr. Cooper: I want to ask when you plant soy beans alone do you sow them or drill them?

Mr. Hoffman: Drill them and plant as quickly as you can to avoid frost.

Mr. Yoder: What is the matter with putting rape in with the corn and soy beans?

Mr. Hoffman: It does not balance the corn at all. They are of the same nature. There was a professor at the college one year that claimed that rape was equal to alfalfa. I told him he might make me believe it, but he couldn't make the hog believe it.

The paper of Mr. W. H. Cooper, of Hedrick, Iowa, on the subject, "Private Sales or Public Sales," followed this discussion.

"This subject is one pertaining to which there has been a great deal of agitation. It is one upon which I feel I can hardly do justice. However, I will give my views.

We, as breeders of pure bred swine, (I emphasize swine breeders in this instance, but my argument should appeal to all breeders irrespective of the kind) when we are fortunate enough to have a crop of hogs ready for movement are confronted with the proposition of how to do it with the least possible expense to realize the most profit, as the profit is that which makes the business most fascinating.

To confront a man with the public sale proposition as a method of disposing of his offerings, he will possibly reply that the expense is so intense it will leave him nothing but a great deal of extra labor and worry to get the same amount he could get for them at private treaty, leaving off the expense and labor but not selling them so high. Possibly this is true with some breeders whose offering will not justify extensive advertising, a ring full of auctioneers, and the seats half full of field representatives, free dinners, free hack to town, and everything free but the hogs. This kind of expense will cut down the profits, to be sure. To make the public sale more profitable one must learn to be conservative, yet not tight.

The public sale method of disposing of property, especially pure bred stock of all kinds, has been abused more, probably, than any other. It is this that has poisoned many contemplating and prospective purchasers, the unprofitable, confidence shattering booming of prices. This one feature has put many practically out of business and kept just as many from going in from the fact that the ring side of a public sale was more of a horror to them than a calm, clean, honorable disposition of property. One may emphasize the extra labor in preparing for a public sale but I admire the man's integrity who fits up a full sale offering of his favorite breed and then invites in his brother breeders, neighbors and those who will, not only to the event, but to view and judge his system of carrying on his breeding operations, that those who come may be able to gain knowledge pertaining to the business and breed.

Again, in making a sale the sale feature alone is not altogether the one thing in view, but it is an advertisement thereafter. One may be in the business for a number of years and use from time to time a limited space in advertising at private treaty but he will not be so well advertised as one public sale will do it from the fact that it will bring the presence of those interested from a radius of ten to 100 miles and farther, who otherwise would not have seen your herd of hogs. Where breeders combine their efforts in making one to four sales in succession in circuit form it brings buyers from afar, as it affords them the privilege of inspecting a number of offerings and herds practically at the expense they would be at in attending one.

Again, one brings together a class of buyers who are ready to purchase any lot to be offered, from the most fashionably and intensely bred down to the common and plainer sorts. And also you get all your offering off your hands in one day and your money at your command.

I have mentioned a few of the good qualities of public sale side of my subject. Let me say a few words to the contrary. A breeder advertises the event which he will hold on a certain date and his brother breeders, neighbors and friends gather, drawn by the representation of his offering appearing in the leading live stock mediums setting forth the supreme individuality, the noted blood lines, as well as the rare opportunity of adding the like to your already established herd, or, just the place to purchase foundation stock of rare merit. And now the offering is nowhere up to the visitors' expectations. He hears others knocking, he gets sore, finally he declares it is the last time he will spend his money to be present at a public sale. In fact, if he is just starting, he is about to ignore the breed and start in some other. Again, one buys a fine individual, it is sold guaranteed a breeder, but when its new purchaser tries to his utmost to make it breed and fails he notifies the former owner, but no reply or acknowledgment of any letter comes, no offer of any settlement, and again you are stung and you renew your resolutions against public sale patronage. Then comes the breeder who condemns the public sale method because he had his offering over-estimated; probably a new breeder and he wished to make an average equal to a man grey in the business, but he did not, and hence he says no more public sale for him.

Now comes the man who advertises his sale, describes his offering, and then sells out his choice stuff; his crowd gathers but fails to bid up and he calls it off. He is in the same class almost as the fellow that has a lot of pluggers to boost up the prices and sells the offering at a record average, but goes around after the sale kicking because he did not get more money for them when the real facts are that he has not enough money to pay his advertising representatives and he stands off his auctioneer. It is these kind of so styled breeders who knock on the method but they are becoming fewer, I think, and I trust the time will soon be when there will be none in the business.

Now as I have reviewed the one side of my subject, I will turn to the other. Many breeders prefer the private sale method from the fact, as they say, it is not so expensive and they give their patrons the benefit of the public sale expense if the patron is dealing with an honest breeder. Possibly he is, but here I fault this side of my subject somewhat. Unless you know your man and know his herd you are sometimes disappointed.

You are sometimes disappointed if you visit his herd and find the special boar that was advertised to be such a wonderfully big hog with superior quality and all that blood lines could represent in breeding, to be an ordinary sized hog, low in the back, long legged, bill nosed, with a rough coat and not very heavy boned. You ask the brother breeder if this is the hog. At the same time you impress him with the fact that he is in no way up to your expectations. When he replies that if he was in show form, that he would be as he described or advertised him to be, you will probably congratulate yourself on coming and having a look.

Once more you will make inquiry of a breeder for your choice of an individual and he will answer that he has just what you want and you send him your cash in advance. When the hog arrives it is not the one you ordered. Some of the points are visible you inquired about but so many undesirable ones that they overcome the good. You of course write him and he tells you to pay the express on it both ways and he will take the hog back. You are out from one to ten dollars as the case might be and you declare by this time you will wait and attend a public sale. So there you are. We have many good reliable breeders who, after the deal is made, will tell you if you like your money better to return the hog at their expense if it is in any way misrepresented. It is this kind of man it is a pleasure to do business with and nine out of ten times you will keep the hog, as quite often it is as good or better than he told you it was.

But to bring my subject to a close, let me say I much prefer the public sale method of disposing of my hogs because I get all my money at once and everything is gone—there are no tailenders left. I bring the buyers in competition with one another and the offering brings more in every instance with me than I can get by disposing of them privately.

Again, I bring breeders, feeders and farmers from a distance to inspect my breeding herd, my methods, and in different ways make the business more attractive. It inspires many a new beginner and gives prestige to the breed. I get more advertising out of my public sales and many others do likewise from the fact that your report as well as the good features are sent broadcast throughout the land. Hence it brings forth comment and interest from all readers. It is today the most popular way of disposing of property of all kinds and in some localities it seems the only possible way as everyone prefers to wait until they can find just what they want and then buy it."

Mr. Hoffman: I expect I am about the only private sale man here. I made a public sale one year. It was a good sale and I got my money, but I prefer to sell my hogs at private sale. I can save the buyer money and make more money myself. Selling by public sale is just as legitimate as selling by private sale. One is just as good as the other. It is merely a matter of choice. I don't see why a man cannot come as well to make his own selection at private sale as he can to a public sale. Of course I believe this, that there is less dissatisfaction as a rule in buying at private sale than public sale for the reason that there is no excitement about it. At private sale a man comes and sees the hog by himself and sometimes at public sales young breeders get roped in. They hear the bidding and begin to bid themselves and first thing they know they have bought a hog they will wish they had not.

Mr. Yoder: I would like to ask Mr. Hoffman to express his opinion of the sale that he did hold. I think he was the man who tried to tell both the good points and the defects and in some cases the defects were not very apparent.

Mr. Hoffman: I expected to hold public sales right along and that was why that was done. When a man writes to you for a hog he will ask you for all the good points and all the defects. I never sold a hog without defects and it is better to tell a man beforehand about them.

Mr. Cooper: There is one other feature about the private sale business. When a man has a hundred or a hundred and fifty head to sell the correspondence is quite extensive. Understand that I don't say that the private sale method is not the thing, but I do admire the man who will fit up a sale offering and invite in his friends and neighbors and let them choose for themselves.

Mr. Hoffman: That remark is true. It takes eight or ten letters to sell a hog. I have had men write me a postal card that would take all night to answer. When a man writes me for a hog I give him a description and range of prices, and try to find out just what he wants.

Mr. Cooper: There is another feature against the public sale method and that is the description of the animals to be sold. I have a good many times glanced at the foot notes describing an individual and wondered where the man got it. I have asked some breeders why they did this and they said it was to get a good mail bid. That is not a legitimate way.

Mr. Allen: In a public sale the man is there to see the hog himself and if he has a field man buy it for him you can dump the blame off on him if the hog doesn't suit. There are other things I like about it. You get rid of your hogs all at once. I would rather get out a catalogue than answer five or six letters every night for two months. In private sale you have to make a trip to town every day or two and your money comes along a little at a time, but when you sell at public sale it is all over at once and when you get your money you pay your auctioneers and field men and you are all through with it—you don't have it any more.

In a discussion on the subject, "Buying Brood Sows by Proxy," Mr. White said: I think that buying brood sows by proxy is like doing anything else by proxy. If you get the right man to do your buying it is all right. Unless you do it is all wrong.

Mr. Harding: I can say that I have tried it both ways, both when I was there to see the sow and by proxy and I have had some very fair results both ways, but if a man is wanting to buy something to build up his herd my advice to him would be to use his own judgment because I have found that when a sow comes out in a sale ring it will probably suit me and some other man would see her and not like her at all and we would both be perfectly honest about it. It is all right if you get the right man that you are sure will buy what you want, but I have seen some pretty good judges make some pretty serious mistakes along that line. Often a hog in a sale ring it will probably suit me and some other man would may overlook something. Buying by proxy is not as good a plan as to be there yourself. One reason especially is that if you make a mistake yourself you have no one else to blame. In the public sale system along the same line, while as Mr. Hoffman said, there is some excitement sometimes and a man may wish afterwards that he had not bought, I feel this way that if a man comes and buys the individual himself he certainly ought to be satisfied. I like both ways, but I become very tired and worried answering letters in the private sale business because sometimes you will write eight or ten letters and then not make a sale. It is lots of work and if you describe your hog and try to pick out all the defects (I always made that practice myself) sometimes you will lose a sale by doing it for the reason that the other man will think your hog is really worse than he is. He may be a first class hog and yet have a few defects. I like the public sale system first rate and I like also to sell privately. If I had a large number to sell I would prefer the public sale. From the standpoint of the seller, I have had some difficulty along that line because in buying by proxy sometimes a man will buy an individual for another man and the man is not satisfied and if he is not he will find fault with me while perhaps I had no knowledge of it at all. The blame comes on the man that it does not belong to.

The subject, "The Swine Breeders' Ability to Control the Supply of Pork," which was on the program for general discussion was taken up by W. D. McTavish, of Coggon, Iowa, as follows:

"In the decade or more that I have been connected with this Swine Breeders' Association we have passed through many vicissitudes and undertaken many things that have seemed easy and found they were difficult. We have undertaken other things that seemed difficult and which we were told were impossible and by united action we have accomplished those things which we were told were impossible.

Now it may be all of you have noticed that when the swine raisers, especially the swine raisers of Iowa, owing to the large number of hogs produced in Iowa, take a concerted action, it has a marked influence on the market regardless of what the buyers think or what their predictions are or what they want it to be. You have all noticed this past year when hogs went down below a certain point the swine raisers simply held their hogs. What was the result? They came up and when they got up to a certain point they got the hogs. They would have dropped back again, but the swine raiser held his hogs for his price. The result was that we have got right around nine cents right along. When they dropped below we held the hogs and they came back. Now, of course, this cannot always be done, yet it shows that if a concerted action was taken and the producers were united as all other institutions are and we had a community of interest to the extent that we would co-operate we could hold our swine business to a profitable level. I am not saying that we should hold it at nine cents. I think myself that it would have been better for us in the long run if the market values had not gone as high this year and yet that is what we have done.

Now, you say, how can this be done. If the swine breeders of Iowa make up their minds they will do it, they can do it. It will take organization, the same as the grain men have done in the past. They organized and carried their point. It merely means that we will have an agreement or community of interest. We will have to be organized.

I have not given this matter very much thought and yet it has occurred to me that we could have our township organizations. We could have a representative man in every township to interest the farmers in that township in the organization. We could have a small membership fee which would go to pay our secretary. Under conditions of this kind we would have to have an office maintained here and this secretary would tabulate all the information necessary. The township organizations would have their meetings at stated intervals and report to the local secretary, say the number of pigs farrowed. Later on they would report the number of pigs saved; then the number raised. This would all be sent in to the state secretary. He would tabulate it for the whole state. The result would be that instead of going and asking our buyer what we should take for our hogs, or how the production was, etc., we would have that knowledge ourselves and it would be accurate. The state secretary would notify every township that there were so many hogs this year and so many hogs last year; the price last year was so much on the number of hogs raised in Iowa—according to the demand and supply the price should be so much this year. That would give us an intelligent idea of our business. We would know about what we should have, and we could go to our buyer and say, when you pay us so much you get our hogs and when you don't you don't, instead of taking just what they give us. We are entirely at the mercy of the packer. The packer tells us always what he will give us. We never say what we shall have.

This was my idea. Of course some will say it is carrying it a little far, yet I want to tell you that we have to come to a more concerted and united interest in our business and if we don't make the effort we will never realize the results. I merely mention this matter, as all things have to start somewhere. We have started things here with no larger attendance than we have tonight and by active work and concerted action we have brought them to a successful climax. We would have to maintain this state secretary here on salary. That is true, but what would that amount to to all the swine breeders in Iowa? It wouldn't amount to fifty cents a year. The grain men maintain just such an organization on just such principles. They have their state secretary on a salary and they gather this information together and send it in to him and he sends back to them just what the conditions are. They know exactly what they are doing but the farmer is in the dark. My idea is for the farmer to put himself in a position so that he can manage his own business."

Dr. Hammer, Des Moines: If there is anything that the farmers and stock raisers need in this country it is organization. The threshing machine men get together once a year to decide different questions, and almost everybody else except the farmer and if the farmers had a solid organization like the other men have they could have just whatever they want because they are the first men next to the soil. I hope what Mr. McTavish has said will be the start of an organization. The time is ripe for it. I would like to see a committee appointed tonight of men who have the push to investigate this thing and get it organized and write to some man in each county to get it started. You have to do it. Just as long as you don't they will rub your nose in the dirt, because everybody else is organized. If you don't plant your seed you never will have a corn crop and you will have to start this thing to get results. There is no reason why you should not figure up what you can afford to raise hogs for to make it profitable and just as soon as you do it the packers will come around and pat you on the back and say, "About how much are you going to charge me for your hogs this year?"

Mr. Yoder: I don't believe that present high prices are the result of any organization of the farmers to get high prices or hold for high prices. I would like to ask if the cause of the high prices is not the result of the farmers getting tired of the low prices and because corn was high and hogs too cheap to feed high priced corn to? This is the result of one organization controling both the buying and the selling price. In one day in the St. Joe market the price of hogs went off one dollar a hundred to the farmers and the price of fresh pork went up one dollar a hundred the same day.

Mr. McTavish: I would like to say that the idea of this organization would not be to boost the price of living nor to make the prices high. As I said before, I regret, and I believe that every far-seeing swine man regrets, that hogs went as high as they did this year. In the end it will be an injury to the industry. But the idea is to protect our selves from absolute loss from that very thing that Mr. Yoder speaks of, having the packer control the whole thing and put the price to the producer down and the price to the consumer up. That is the thing we want to head off. We are in a position where we have to sink or swim. We have to protect our interests the same as the packer, the same as the railroad man, or any other class of men. We have our money invested in our land. We raise a good crop of corn and a good crop of hogs. We feed the corn to the hogs and the packer knocks the price down and we are not able to realize six per cent on the money invested in our land at the actual valuation and pay all our expenses during the year. What man is there who can do it or is doing it? He cannot do it and sell hogs on the market. All this is based on the proposition of market value you understand. When the price of corn goes up then the packers take the advantage because the pigs begin to come in and they make the excuse of the large run on the market. The weights may be low so they will not fill any more barrels of pork, yet that is the excuse and they hammer down the price.

We are working in the dark entirely now where if this organization was brought about it would lead to wider information. We could just as well get the number of bushels of corn a man has so that we could know just what we should get. The question merely is that we will know our own business and that is all. It is not a matter of trying to boost the high cost of living. It would stand us in hand not to make these remarks public to get into the daily papers because there is nothing that would inflame the public mind any more than that but still it would be well for us to see what we can do. The only excuse for the existence of this organization is what we can do for the swine raisers of the state of Iowa. If this organization cannot do anything that will be for the benefit of the swine raisers of Iowa it will naturally cease to exist. It has done things from time to time and it is that that has made it live. If this matter should be successful in Iowa it would naturally spread to Illinois and Nebraska and they are both heavy hog raisers. If three states would organize we would pretty near know what we would get for our hogs.

Dr. Hammer: If the railroads would say that it takes so much to pay the running expenses and make six per cent on the investment there is not a judge in the country but what would say you cannot lower it any more than that. That is what we want. Something that will protect us from doing business at a loss. The farmers are willing to place it at a reasonable profit. There is no doubt about that. If there was an organization at all it would not be any skin deal.

Mr. Cooper: I certainly admire the interest the two brother breeders manifest in the welfare and future of the swine breeders. No doubt they are advocating a good thing, but there are two sides to be considered. You must take into consideration that hogs are perishable property and supposing the entire swine producing section of this nation would keep on producing hogs and swine diseases would break out and the like of that, wouldn't we experience a great loss? The packers are not nearly so many as the swine breeders and are more closely organized and it seems to me that if we set a certain price and force the packer to pay that price he will simply put that price higher yet and place it on the consumer. I am at any time ready to co-operate for the welfare of the breeders at large, but for my part I think there is a great risk in an organization of that kind.

Mr. McTavish: I don't want to take this floor all the time, but I want to say that the brother doesn't get my idea. The idea is not to set the price on hogs. That cannot be done because there are too many men who will have various reasons for selling the hogs and rushing them in, but the idea is that all the farmers would have the knowledge of the number of hogs there are in the state ready for market and what they should bring according to the number to be marketed and then they are in a position to exercise their own judgment. Now we are in the dark, but if the great majority knew what the conditions were it would tend to level prices and operate in that way. Now as to disease. That can also be reported and when there is an outbreak of disease every township would report to the state secretary the number of hogs lost. Then they know exactly what the loss is and what numbers there are left to market.

W. C. McGavock, Springfield, Ill.: I am not a hog breeder, but the cause of all these high prices is undoubtedly, as has been stated, the rushing to market a couple of years ago or more and ever since of a big hog supply because corn was too high to feed hogs at the prices they were bringing. No combination you could get into would have kept the farmers from doing that. You could not store them away. They had to market them. There is nothing that would have kept them from going to market. This information would be a good thing, but we would have to have it from all over the United States.

Mr. Hammer: I just want to answer that argument. When the corn got high and everybody got into a panic the packers took advantage of it and hammered the prices down and if they had advanced the price of hogs in proportion to the price of corn there would not have been any panic. The farmers are the only class that is not organized. Even the threshing machine men settle on what they are going to charge. If you will organize and get the information you will only be protecting yourselves.

PART VIII

PROCEEDINGS

OF THE

Thirty-fourth Annual Convention

OF THE

IOWA STATE DAIRY ASSOCIATION

Held at Waterloo, Iowa

OCTOBER 10th, 11th, 12th 13th, 14th and 15th

1910

OFFICERS

W. B. BARNEY, DES MOINES.....................................*President*
F. W. STEPHENSON, LAMONT...*Vice-President*
W. B. JOHNSON, DES MOINES.......................................*Secretary*
F. L. ODELL, DES MOINES..*Treasurer*

The Iowa State Dairy Association met in its thirty-fourth annual convention at Waterloo, and was called to order Tuesday evening, October 11, 1910, at 7:45, President Barney in the chair.

Rev. F. C. Cole, of Waterloo, opened the session with invocation.

ADDRESS OF WELCOME.

E. R. SHOEMAKER, WATERLOO.

Mr. President, Ladies and Gentlemen: You will not be surprised to hear me say that I am glad to see you here, because personally if there is anything I like better than cows and dairymen and buttermakers and commission men and supply men, it is more of them. You will not be surprised, either, to hear me say that every citizen of Waterloo feels tonight exactly as I do with reference to this matter, only in a more intensive degree, if that be possible.

There are a good many reasons why Waterloo is glad to see you people here this week. I might talk an hour or more and not exhaust all the good things that might be said, but I am going to cut my speech short. We have had conventions in Waterloo, we have had your own annual meeting, and we have every reason to be proud, but we are certain that this week's meeting of the Iowa State Dairy Association is going to knock the spots out of any convention ever held in Waterloo. We are glad to have you here because you are an organization that does things, and if there is anything Waterloo people like it is people who are alive. These are a few of the things you have been doing. You have secured yourselves a small appropriation from the state and are spending that money for educational work and in a way that every one of you can feel proud, as you are using it in a way that it ought to be used and the way it was intended to be used. Not only that, but you are engaged in the greatest industry on earth. We are proud of the honor that hangs over your head. That is another reason why we are glad to have you in Waterloo. We hope you will enjoy yourselves. If there are any policemen in Waterloo this week they are deaf, dumb and blind. We welcome you here and hope you come again—often. I thank you.

RESPONSE TO ADDRESS OF WELCOME.

H. E. FOWLER, HANLONTOWN.

Mr. President and Members of this Association: I appreciate the honor of being called upon to respond to the generous welcome that we have received from Mr. Shoemaker and Waterloo. No city within the borders of our commonwealth is better equipped to entertain a convention of this kind than Waterloo. No better facilities can be had anywhere than we have here at this time, and we sincerely hope that your city will be so well pleased with us while we are here this week that they will be glad to entertain us again.

We are gathered here in our 34th convention, and during that time we have witnessed some wonderful changes. We have seen this association grow from a mere handful to our present strength and numbers. We have seen our creameries grow from one to nearly 600. We have seen the output of butter grow from a few hundred pounds to nearly 200,000,000 pounds per year. Yet, notwithstanding all this growth and all that has been said and done, the dairy industry is still in its infancy, and not until the past two or three years have we begun to realize the possibilities. It was not until our legislature woke up to these possibilities that we were able to secure such a man as Van Pelt, who in a short time has caused our farmers to appreciate the importance of keeping good cows by showing them the difference between good ones and poor ones. It was not until our dairymen began to see this difference that this branch of farming really became an industry, and no better proof of this condition can be offered than the quality and quantity of the exhibits here at this time. All this activity and interest has been due to the efforts of the members of the Iowa State Dairy Association under the leadership of Barney and Van Pelt. To these men and their assistants we are indebted for what has been accomplished, and we are indebted to the Waterloo spirit for the excellent accommodations we have at this convention. I thank you.

The Chairman: We will now listen to the report of our secretary, W. B. Johnson.

SECRETARY'S REPORT.

Mr. Johnson: For the fifth time I stand before you to make you acquainted with the financial condition of your organization, and for the fifth time I have the personal satisfaction of reporting an increased balance of money on hand. After serving you for five years, I want to, in retiring as secretary at the close of this meeting, wish you God speed in the continuation of this association—one of the greatest, grandest organizations this state has ever known. And if there is ever a time when I can lend a helping hand to this organization I want you to remember that I stand ready to respond.

The report as it stands for the year ending July 1, 1910, is as follows:

			Receipts	Disbursements.
July	1, 1909	Balance in treasury	$ 1,590.16	
Nov.	19, 1909	Cash from Cedar Rapids	450.00	
Nov.	19, 1909	Cash memberships	223.00	
Nov.	27, 1909	Butter sales	1,005.95	
July	1, 1910	Advertising	443.00	
July	1, 1910	Sale of booths	648.05	
July	1, 1910	Interest on deposits	65.19	
July	1, 1910	Bills paid by treasurer to date		$2,510.70
		Balance		1,906.65
			$4,417.35	$4,417.35
Sept.	25, 1910	Collection of $28 on last year's business making a grand total of, balance		1,934.65

Auditing Committee:
W. F. MACK,
F. A. LEIGHTON.

W. B. JOHNSON,
Secretary.

The Chairman: I think this association and Mr. Johnson are to be congratulated on the splendid showing made. The next well be the report of our treasurer, F. L. Odell.

Mr. Odell: Before I read the report I might make an explanation as to when our year ends and begins. The books are balanced on the 30th day of June, so that our year begins at that time or the first of July, so these reports always show the condition at that time. On June 30, 1909, the association had on hand $1,590.16, so the past year's report will include the convention at Cedar Rapids.

The detailed report follows:

TREASURER'S REPORT.

Statement of finances of Iowa State Dairy Association from June 30, 1909, to June 30, 1910.

RECEIPTS.

June	30, 1909	Cash on hand	$1,590.16
July	9, 1909	Membership	13.00
Nov.	19, 1909	City Cedar Rapids	450.00
Nov.	19, 1909	Membership	206.00
Nov.	26, 1909	Pettit and Reed	5.00
Nov.	26, 1909	Thos. McCarty	5.00
Nov.	26, 1909	Jacob Jacobson	10.00
Nov.	26, 1909	Gude Bros.	10.00
Nov.	26, 1909	Diamond Crystal Salt	24.30
Nov.	30, 1909	Creamery Page Mfg. Co	77.00
Nov.	30, 1909	Fuller Warren Co	12.40
Nov.	30, 1909	Spurbeck Lambert Co	10.00
Nov.	30, 1909	Collyer & Co	5.00
Nov.	30, 1909	Gude Bros. (Sale of butter)	987.35
Dec.	2, 1909	Sharpless Separator Co	37.00
Dec.	2, 1909	Kimballs' Dairy Farmer	8.00
Dec.	2, 1909	Fred L. Kimball Co	10.00
Dec.	2, 1909	DeLaval Separator Co	15.00
Dec.	2, 1909	Lambly & Alpaugh	10.00
Dec.	2, 1909	Johnston & Coughlan	10.00
Dec.	2, 1909	Coyne Bros.	10.00
Dec.	2, 1909	Northey Mfg. Co	10.00
Dec.	2, 1909	Pitt Barnum & Co	5.00
Dec.	2, 1909	Wagner Glass Works	5.00
Dec.	2, 1909	Enyard & Godley	10.00
Dec.	2, 1909	James Rowland & Co	5.00
Dec.	2, 1909	Fox River Butter Co	10.00
Dec.	6, 1909	Torsion Balance Co	40.00
Dec.	6, 1909	Farmers' Co-Op, Produce Co	10.00
Dec.	6, 1909	American Guernsey Cattle Club	30.00
Dec.	6, 1909	Edson Bros.	10.00
Dec.	6, 1909	Gallagher Bros.	5.00
Dec.	6, 1909	J. G. Cherry Co	115.80
Dec.	6, 1909	International Harvester Co	40.00
Dec.	6, 1909	Standard Oil Co	10.00
Dec.	7, 1909	Fitch Cornell & Co	10.00
Dec,	14, 1909	John Scholl & Bro	5.00

Dec,	14, 1909	J. B. Ford & Co	40.00
Dec,	14, 1909	Chris Hansen Laboratory	28.00
Dec,	14, 1909	Corn Products Co	30.00
Dec,	14, 1909	Hohmann & Mauer Mfg. Co	18.00
Dec,	14, 1909	Puffer Hubbard Mfg. Co	7.50
Dec,	14, 1909	Geo. M. Rittenhouse & Co	10.00
Dec,	14, 1909	Crawford & Lehman	10.00
Dec,	14, 1909	Sturges & Burnes Mfg. Co	10.00
Dec,	14, 1909	Grand Hotel Cedar Rapids	10.00
Dec,	14, 1909	American Box Co	5.00
Dec,	14, 1909	P. F. Brown & Co	10.00
Dec,	14, 1909	Baer Aiken & Co	5.00
Dec,	14, 1909	Olov Ericson	5.00
Dec.	21, 1909	Henenberger & Herald	5.00
Dec.	21, 1909	Eastern States Rep. Co	10.00
Dec.	21, 1909	Membership	1.00
Dec.	21, 1909	Hotel Montrose, C. R	10.00
Dec.	28, 1909	Vermont Farm Machine Co	15.00
Dec.	31, 1909	Interest	24.12
Jan.	11, 1910	Chas. Skidd	5.00
Jan.	11, 1910	American Jersey Cattle Club	36.00
Jan.	11, 1910	F. L. Odell (Tub butter)	6.20
Jan.	11, 1910	Membership	2.00
Jan.	15, 1910	Worcester Salt Co	24.00
Jan.	15, 1910	Wells & Richards Co	37.00
Jan.	19, 1910	A. H. Barber Supply Co	40.00
Jan.	19, 1910	International Salt Co	30.00
Jan.	27, 1910	Hunter Walton & Co	5.00
Jan.	27, 1910	Des Moines Silo & Mfg. Co	14.85
Jan.	27, 1910	Boerner Frye Co	3.75
Feb.	10, 1910	Crisler Harrow Co	14.85
April	5, 1910	Membership J H Sasseen	1.00
April	5, 1910	Iowa Dairy Separator Co	67.00
April	5, 1910	Gifford Wood Co	10.00
June	30, 1910	Interest	41.07
		Total	$4,417.35

DISBURSEMENTS.

Sept.	6, 1909	W. B. Barney	12.35
Oct.	18, 1909	W. B. Johnson	35.00
Oct.	30, 1909	Express badges, Wells Fargo	131.47
Nov.	17, 1909	Express on butter	21.10
Nov.	18, 1909	Gold for premium fund butter	60.00
Nov.	18, 1909	Express on butter U. S.	18.15
Nov.	18, 1909	Express on butter, Wells Fargo	20.11
Nov.	19, 1909	E. T. Sadler, reporting meeting	75.00
Nov.	19, 1909	W. B. Barney & Co., cattle exhibit	97.15
Nov.	19, 1909	Express	13.26

Nov. 19, 1909	Cattle exhibit from Ames	38.00
Nov. 19, 1909	F. L. Odell, expense	9.13
Nov. 19, 1909	W. B. Johnson, salary and expense	214.81
Nov. 19, 1909	C. E. Faucet, working picture machine	3.00
Nov. 19, 1909	Express	.85
Nov. 19, 1909	H. G. Van Pelt, expense cattle exhib	34.84
Nov. 19, 1909	Sawdust for cattle	7.50
Nov. 16, 1909	Calders Van & Storage Co	4.50
Nov. 16, 1909	Pro ratio fund for butter	1,000.00
Nov. 16, 1909	Montrose Hotel, Gov. Carroll	5.10
Nov. 22, 1909	E. C. Lytton, expense	20.01
Nov. 30, 1909	A. L. Haecker, expense	29.50
Nov. 30, 1909	Medals, Philleo & Nutting	40.00
Nov. 30, 1909	Express on tub butter	.55
Nov. 30, 1909	Wingert & Lefers, printing	12.50
Nov. 30, 1909	Fred L. Kimball Co., printing	380.51
Nov. 30, 1909	J. S. Anderson & Son, Treasurer's bond	10.00
Nov. 30, 1909	Fred L. Kimball Co	3.55
Nov. 30, 1909	W. B. Barney	16.75
Nov. 30, 1909	E. R. Shoemaker	10.95
Nov. 30, 1909	Prof. M. Mortensen	4.28
Jan. 15, 1910	American Jersey Cattle club	56.59
May 9, 1910	Gerritt Klay, expense	103.73
May 10, 1910	Expense meeting in Des Moines	15.00
June 18, 1910	W. B. Barney, expense	5.46
		$2,510.70
June 30, 1910	Total receipts	$4,417.35
June 30, 1910	Total disbursements	2,510.70
June 30, 1910	Total cash on hand	$1,906.65

Auditing Committee:
W. F. MACK,
F. A. LEIGHTON.

F. L. ODELL,
Treasurer.

Mr Stephenson: The next on our program is the president's annual address by Hon. W. B. Barney:

ADDRESS OF PRESIDENT W. B. BARNEY.

BEFORE THE IOWA STATE DAIRY ASSOCIATION HELD AT WATERLOO, IOWA, OCTOBER 10TH-15TH.

For the fourth time I am called upon to address you as your president. I hope I may be pardoned if I shall only deal with the few subjects that appear most important at this time.

Dairying in Iowa has gone by leaps and bounds for the last three years. There are many reasons for this and the work of this association is chief among them. Two years ago last spring, the campaign to enlist the legislature in our behalf was started and it lasted nearly a year with the result that we were given $10,000 for the biennial period. We are very sure that it will be an easy matter to show the next legislature that no money was appropriated by the general assembly which has been of more benefit to all the people than has this. The fact that we shall be able to properly account for every cent that will be used, and to show that we have collected many hundred dollars to defray the expense of speakers at dairy meetings and pay State Dairy Expert Van Pelt his extra salary, should make it comparatively easy to get this appropriation renewed.

I would recommend that this be made an annual appropriation of not less than $7,000 and that the law be amended to make the state dairy expert's salary $2,000. It would be well enough to put the $1,500 limit on the assistants, but a strictly high class man like Prof. Van Pelt cannot be secured at less than $2,000, and it is too much of a tax on our dairy friends to ask them to donate the $500 a year as they have been obliged to do for the last two years.

Our legislature should remember that the cost of living has materially increased in the last few years, and that when they go on the market for help they come in competition with commercial institutions that are willing to pay a salary commensurate with the service rendered.

Last year the association employed Mr. Patterson as an assistant. He did his work so well that when the North Iowa Dairy Improvement Association was formed he was induced to accept a place with them.

Briefly, the plan of this association is as follows: Ten creameries agree to an assessment of 1-10 of one cent per pound on their output; this fund is used to pay Mr. Patterson's salary and expenses and he devotes his entire time to them and their patrons. The Government has wisely authorized one of their experts, Mr. F. L. Odell, to give this work a part of his time.

This is the first association of its kind that has been organized, and although the work is new, splendid results are already being shown. The work is being watched by the entire country.

The work at Algona under the direction of Mr. E. B. Heaton, Junior Dairyman, employed by the Government, is a new one and the state is most fortunate in securing this aid. The plan is to place Mr. Heaton's services at the command of a community for a term of three or four years. To begin with, he secures all possible data as to their conditions. He is expected to devote his time to teaching the dairymen and farmers how to produce more and better dairy products by breeding up their herds and by the use of more scientific methods of feeding. He is supposed to spend a part of his time with their creamery.

This work, as we understand it, is to be under the direction of Hon. B. H. Rawl, Chief of the Dairy Division, Washington, D. C. Mr. Rawl has asked the professor in dairying at Ames and the State Food and Dairy Commissioner to co-operate with him in the management of the work and they have consented to do so.

This association has always been progressive. This is evidenced by the fact that we are putting on this year, in connection with the regular convention, a Dairy Cattle show. This does not mean that the buttermaker is to be overlooked. It does mean that he is to have more attention than ever before, and will be asked to co-operate with his patrons and try and get them to milk more and better cows. Another new feature of our meeting this year is the "buttermaker's hour" under the direction of your worthy Vice-President F. L. Stephenson. If there are any matters that you are interested in that will help our convention do not fail to bring them up for discussion so they may be incorporated another year.

The public has criticised the dairy farmer on account of the advanced price of dairy products. When the cost of producing a pound of butter or a gallon of milk is compared with the same ten years ago, this criticism is entirely unfounded.

A recent government bulletin gives the cost of maintenance of a cow for a year as a little more than double that of ten years ago. When you take into consideration the value of land, the cost of buildings, labor and the various things that must be counted, we are not surprised at this conclusion. Feed has more than doubled in value. Going a little further back, say twenty or twenty-five years, the writer recalls having bought first-class bran for $4.00 per ton and the finest of clover hay for $3.50 per ton. Is it not fair to say that if milk sold at five cents per quart at that time good milk should bring ten cents per quart now. If it were understood by the housewives and people generally that a quart of 4 per cent milk contained more body supporting food than three-fourths of a pound of the best beefsteak and as much as eight average eggs the sale of milk would be doubled. Beefsteak costs from 20 to 25 cents per pound and dairy people should be more diligent than they have been in educationg the public along these lines. Milk is the most nearly perfect of all foods, as it contains in an easily digestible form all the nutritive elements required for the body. The increased cost brings us face to face with another question—"How can we reduce this cost of production?"

We may, by the use of a silo, nearly double the value of our corn crop, but there is no way that we have been able to buy bran, gluten and other feeds at less than market price. Recent reports show that a cow that produces 450 pounds of butter fat per year does so at about half the cost per pound as does the one that only makes 200 pounds per year. This means that we must have better cows or make no money. The 150 and 200 pound cow must be replaced as soon as possible with those that will yield 250 to 350 pounds. An increase of 50 pounds per cow would mean an increased income to Iowa of $18,750,000. We should not be satisfied with this. One hundred pounds per cow is not an extravagant amount to anticipate. This would give the net increase of $37,500,000. How insignificant our appropriation of $5,000 per year is compared with the former figures.

The distribution of this money over our state would mean the betterment of the conditions of every man, woman and child. The general business of the state would receive an impetus. Every man from the common laborer to the merchant, banker or professional man would finally come into his share.

The dairy train run over the C. B. & Q. in southern Iowa by this association was the beginning of a new era in that part of the state and the interest in dairy work has been aroused to such an extent that several new creameries have been built and the demand for dairy cows and pure bred dairy sires has increased within a year more than a hundred per cent. No section of our state is better adapted to dairying than the southern part, and we must give that territory special attention as the opportunity is here now for development.

We believe the dairy people of this state are to be congratulated on the fact that we have but one organization in the state, and that one comprehensive enough in its scope to take in the buttermaker, the cheesemaker, the dairyman and kindred interests. It does not appear to me that anyone advising a division of these forces has gone into the matter very thoroughly or knows what might be the result of such a division. It is unreasonable to suppose that these forces divided could get the result that they can combined.

Could the National Creamery Buttermakers' Association or the National Dairy Show either one of them put on such a show as the one held in Milwaukee last October? The fact that these two associations are gradually growing nearer together is the best evidence that we in Iowa should continue united in our work. If we can be shown another state that has made such progress in dairying in the last five years we may be able to revise our views on this important matter. We think we tried to explain our position in this matter in a former address, and hope we have been able to make it quite clear at this time.

The National Dairy Union is about to go to battle with our old enemy "the Oleomargarine people." They are entitled to our support individually and as an association. We must not under-estimate the strength of our adversary, for we may be caught unawares. Explain to your congressman and senator why he should not only vote for our measures but use his influence with legislators from other states. With such men as Lorimer, Moxley and others with their millions back of them and wholly devoid of principle, we cannot expect a square deal and should be ready for any emergency.

To W. W. Marsh of this city and his plan and the offering of $1,000 for a yearly butter test, this association and the state are greatly indebted. To "Dairy Maid of Pineherst" and her phenomenal three-year-old record of 1066 pounds of butter in a year surpassing all other cows, age considered, is due more credit for having brought Iowa into prominence as a place where high class dairy cattle may be had than anything that has happened. Mr. Marsh and the Guernsey people may be justly proud of this record and the cow.

For many years, we have recognized the merits of Hoard's Dairyman and the great influence for good it has brought to bear on the dairymen of our state. It is most gratifying to note the fact that in Kimball's Dairy Farmer this association and the dairymen of Iowa have a staunch friend and supporter whose indefatigable work in our interests cannot be too highly appreciated. This association could have never attained the prominence it has without this paper's support. The phenomenal growth and improvement in the paper has more than kept pace with the association.

Bovine tuberculosis and its relation as a causative factor in human tuberculosis, is a subject that has engaged the earnest attention of the people, particularly of the cities, as it relates to the city milk supply, and ordinances intended to exclude the milk of tubercular cows were passed by many of the municipal authorities. These ordinances being submitted to the supreme court were adjudged unconstitutional. It would seem that it is to say the least, unwise for cities to undertake to make laws on this subject until after the state has first made a move in this direction, as it is a question of too large magnitude to be handled by any city, county or possibly even the state without the support of the federal government.

I also believe that the danger to human life from this cause has been exaggerated, and that the tubercular cow gives tuberculosis milk only when there is a lesion in the udder. And the sick cow gives no milk. If the slaughter of the cow not passing the tuberculin test is to be insisted upon as a public health measure, then the public should bear at least a share of the financial loss incurred thereby, and if the dairy cow, why not all other cattle, as tuberculosis is an infectious disease and your cow would be in constant danger of contracting the disease from her brother, the steer. All that the dairyman asks is a square deal. Why should he be required to submit his herd to the tuberculin test and suffer the loss of those that react when his neighbor is permitted to place untested cattle in an adjoining pasture after he has his herd cleaned up.

Our legislature should consider this matter at their next session, and we believe that but little headway can be made in the battle against bovine tuberculosis until the owner of the cow is more willing and anxious than any other man to clean up his herd, and laws passed to which he does not subscribe would be a dead letter. His co-operation may be secured only when you can convince him that it is to his own financial advantage to rid his herd of this disease. That it would pay him, we are convinced. The tuberculosis cow in a herd renders all other cattle in that herd liable to infection and all hogs following such an animal is pretty sure to contract the disease, and tuberculosis among hogs is a question that the farmers of Iowa should reckon with now, before it becomes more widespread.

Iowa is in a large measure indebted to some of the eastern states for the introduction of this disease into our midst. As a number of years since when this question was agitated in the east, a large number of dairy cows that had reacted to the tuberculin test were shipped into Iowa, particularly in the neighborhood of our cities, and sold to the local dairymen —this in the days before Iowa dairymen had heard anything about tuberculosis cattle. This agitation has been conducive to much good, as it has aroused the people as nothing else could have done to the danger of using dirty and unsanitary milk.

Many of us getting into the afternoon of life can easily recall the fact that not more than a score of years ago, if there were three or four boys in a family on the farm it was very generally decided that the one showing the most marked characteristics as to business ability should be sent to town as most any of them could farm.

Under present conditions, we know of no reason why this should be so, as there is no more dignified or respectable calling than that of a successful dairy farmer. There is none other that will put a greater premium on brains. Therefore, I wish to say to the young man or boy who may be anxious to get to the city or town, that you are apt to be overlooking an opportunity to make yourself a most useful and influential citizen of our commonwealth by leaving the farm. If you have the elements that go to make up a successful career, they may as well be developed in this vocation as any other and the chances are that a competency for old age is as apt to be accumulated as though you went to the city. We recently learned that about 85 per cent of the street car conductors and motormen in a city of 150,000 inhabitants were formerly boys on the farm. We do not refer to this out of any disrespect to these men, but to show that only a small per cent of those leaving the farm find very easy or lucrative positions. Free mail delivery, telephone service, better roads, the automobile and modern conveniences in the farm house, all go to make farm life more attractive.

In closing, permit me to thank the members of the executive committee and each member of the association for their loyal support of my efforts to accomplish the things that in my judgment seemed best for all. Much has been done, yet we are only just getting well started. The acquaintances and friendships formed in this work are prized by me beyond measure and will be cherished as long as life shall last.

Mr. Shoemaker: I presume that most of you are aware that a friend of this organization, a man who has been active in this work and in the dairy business of Iowa is ill in the hospital at Des Moines. I, therefore, move that the president, in behalf of this association, send a message of sympathy and cheer to Mr. Wright at the Mercy hospital in Des Moines.

(Motion was seconded and unanimously carried.)

Mr. Marsh: I am advised of the fact that ex-Governor Hoard, of Wisconsin, who has done so much for the dairy world, is 74 years old today, and I make a motion that our president be instructed to send a message congratulating him on the fact that he has attained his 74th year.

(Motion was seconded and unanimously carried.)

Adjournment.

WEDNESDAY MORNING, 10:30.

Vice-president Stephenson presiding.

Mr. Stephenson: Our first number this morning is an address by Ira O'Neel, of Clarion, on the subject of "Problems of Creamery Management":

PROBLEMS OF CREAMERY MANAGEMENT.

IRA O'NEEL, CLARION, IOWA.

Mr. President, Ladies and Gentlemen of the Iowa State Dairy Association.

I assure you that I highly appreciate the privilege which is mine today to speak to you upon a subject of so great importance as the problems of creamery management. I wish to say just here that I was not chosen to speak upon this subject because I had solved all the problems of creamery management for I doubt not that long after you and I have passed from this stage of action that there will still be some problems unsolved.

I presume that if I were to line up one hundred men from this audience, managers, secretaries and buttermakers from one hundred sections in the state of Iowa and interrogate them as to the one problem which they considered of the greatest importance in the management of creameries today, I doubt not that 99 out of the 100 would give me virtually the same answer and that answer would be "to get cream of such quality that it can be made into fine butter." This is indeed a problem of vital importance, a question which at present means not only the success or failure but the life or death of some creameries.

I believe a large per cent of us, in fact all of us, who have been connected with the creamery industry for the past ten years or more can well remember when conditions were not what they are today; it is true that the whole milk system had its difficulties and its problems to be solved but under the "gathered cream" system the difficulties have grown and multiplied as "mountains beside mole hills." But do not understand me to say that I consider that the "gathered cream" system is responsible for all our problems today for I do not believe that it was ever intended by the promoters of the "gathered cream" system that it should be run as it is run over a large part of our country today. In the first place it never was intended that some farmers and dairymen should skim and handle their cream in conditions and surroundings which are unsanitary to say the least. Neither was it intended that in many sections of the country, wagon drivers should start out at sunrise and drive all day or a large part of the day and gather cream when the mercury plays around the ninety degree mark or higher. Much less was it ever intended that a very large percentage of this same cream should pass through the hands of the indiscriminating merchant buyer who cares little or nothing of the quality of the cream or the conditions under which it was produced so long as he gets his commission for handling, and this is not all, he not only cares little or nothing for the quality of the cream he buys but he also stretches the test to the very limit of the endurance of the creamery for which he buys. But it is not my purpose to simply bring to mind the conditions as we all know they exist today, all too frequently but I shall also endeavor to lay before you some plans which I believe if carried out would revolutionize present conditions and do much toward relieving them and eliminating much of the present loss. I believe a system of field work could be established in the principal dairy sections, looking toward the betterment of methods and conditions in the hands and on the premises of the producer.

But before this system there must first be a determination on the part of the managers, secretaries and buttermakers that the standard of Iowa's butter shall be raised. It will also be necessary to gain the aid and co-operation of the producer. I do not believe that compulsory laws, state or national, would bring about the pleasant and profitable results that hearty co-operation would.

When these ends have been gained, let a field man be placed in these principal dairy sections to do personal work on the farms and dairies that will bring about the results. Let these "field men" be men of ability not the fellow who can be hired cheap; but the man who can show results of his labors. Let him be a man who can go to the producer and instruct him in the proper methods of handling and delivering his cream and in care of the separators and other utensils, and not only must this "field man" be able to instruct the dairy men privately but he must be able also to speak to them collectively in public. Neither can he visit the farm once and expect results but he must visit it not less than once in every thirty days and as much oftener as the conditions seem to require. While at the farm he can also, if he be a man of abiliy, aid and insruct the dairy men in breeding, feeding and testing of the cows. In this way he will not only aid in producing better cream, but more cream and more profit for every dollar invested in feed and labor. "But," says one, "this system would require the expenditure of a vast sum of money to keep these field men in the principal dairy sections." True, there would be some expense connected with it but, my friends, have you ever stopped to figure how much the dairy men of the state are loosing today under the present state of affairs? Few of us have. The report of the dairy commissioner for 1909 tells us that nearly 102 millions of pounds of butter were made by the creameries of Iowa in that year. Only fifty-one creameries were "whole milk" the other four hundred seventy had more or less "gathered cream" and a very large per cent no milk at all. We find that there are comparatively few of the creameries getting nothing but cream that get the highest market price for their butter at all seasons of the year and I verily believe that the present loss over the state is amply large to keep a "field man" in every dairy section in the state, giving him such territory as could be properly handled and pay him $1,200 or more annually and traveling expenses, even if the expense must come directly from the territory served independent of any aid, state or national. But it seems to me, from my view point, that at least part of the funds now used to keep some of the government inspectors in the butter markets, might better be used first to influence the productions of better raw material and then there would be less need of inspection on the butter market.

And in conclusion, a few words to creamery managers, secretaries and buttermakers. I am aware that there are scores of you who are doing your whole duty to the company or corporation by which you are employed every day in the year. But it is a lamentable fact also that there are today creameries in Iowa, and not a few, which owe their existance today to chance rather than to business management. I presume that these secretaries of the creameries could tell from time to time how much or how little there was to their credit at the bank where they transact their business, but few of these men could tell whether their creameries had one dollar profit in their business or whether it was ten dollars loss. I believe the time is fast passing when the "gathered cream" creamery can succeed by using the composite test system and taking a certain amount of cream for each sample of each delivery regardless of quantity or quality of the cream, and the every day test system must take its place. Also I believe that the time when a creamery could succeed using the old "slip-shod" method of bookkeeping is now past and it has become necessary to keep very accurate record of the cream received and the butterfat it contains and then to check up with the pounds of butter made each day and by so doing we are able to know whether yesterday's business was done at a profit or at a loss. Now it is my sincere hope if there be a manager, secretary or buttermaker here who can plead guilty to allowing affairs at the creamery of which he has charge to go by chance or "hap-hazard" that he will go home from this convention in a firm determination that there will be some changes made in his system of operation; if this is not done, your friends and neighbors who are keeping you in those positions will sooner or later realize that they have been keeping a man in your position who was unworthy of the trust placed in him, to say the least. I thank you.

Mr. Stephenson: We have a few minutes for discussion. This is a very important matter and ought to be freely discussed.

Mr. Glover: I would like to ask Mr. O'Neel if he doesn't think one of the helps in solving the quality problem is to gather the cream each day.

Mr. O'Neel: I presume that would bring about results, but you will find that in the large territory over central Iowa that is covered our roads are such that it is next to impossible to get haulers to go over them every day. In my territory we have men who drive thirty miles on a cream route. It is impossible to get them to drive it every day.

Mr. Glover: How, then, do you expect the farmers to deliver it every day?

Mr. O'Neel: I didn't mean to say that I expected the farmers to deliver that cream every day. I believe the average farmer has conditions, if he will do his duty, whereby he can keep that cream and deliver it at least three times a week with good results. The trouble with this is, a man delivered his cream yesterday and should deliver it again tomorrow, but he has some hay down that needs his attention, and as a consequence that cream is left until it is convenient for him to take it to the creamery. He can deliver his hogs in town, put his hay in the barn when it should be, but the cream is left until the last.

Mr. Kidder: Let me ask you: Why is this cream left until the last thing? Because the creamery is so anxious to get it that they pay just the same for the poor as they do for the good. I think it would solve the problem to pay according to quality.

Mr. O'Neel: I believe that system has been tried out several different times and in several localities in Iowa. In some places it has worked out very satisfactorily, but there are other sections in small towns where there are from one to three cash buyers buying for the large centralizers who care little for quality and they pay for it regardless of quality or condition. So if you don't take it they will take it elsewhere.

Mr. Kidder: If the creamery that receives that cream lost money on it they cannot continue in business very long. I would rather operate with less cream at a profit than with more at a loss.

Mr. O'Neil: I think without exception the men who are sending milk to the whole-milk creameries are receiving more for their butterfat than those who send to the gathered-cream factories.

Mr. Fowler: I was at Malvern last fall and they delivered their cream once a week. I think they paid 23 cents for butterfat. Will that induce farmers to produce butterfat?

Mr. Stephenson: I hate to close the discussion of this interesting and important subject, but I guess we will have to. The next is an address by E. S. Estel, assistant state dairy expert, on "The Relation of the Buttermaker to the Creamery Patron and to the Dairy Cow."

Mr. Estel: Mr. O'Neil asked you to pardon him for having written his talk. I am going to ask you to pardon me for not writing mine.

From the most remote time we find the dairy cow has been a close friend of the man or woman who made her butterfat into the finished product. In Holland, Denmark, and the Guernsey and Jersey Islands, the butter was made on the farm, and necessarily the buttermaker and the cow were very closely related. In fact it was very seldom, indeed, that the buttermaker and the dairy cow did not sleep under the same roof. I regret very much to see this intimacy between these two almost inseparable parties waning at the present time. In this age of specialization we find the manufacturer and producer of dairy products drifting further and further apart. In many instances the dairy cow is hundreds of miles from the factory where her butterfat is converted into butter, and the buttermaker never sees from one year's end to the next a single cow that produces the fat which he handles every day.

The creamery is always considered the center of the dairy industry. Wherever the dairy cow's path leads the creamery sooner or later finds its way. In the case of the smaller creamies that do not operate routes the plant is visited by the farmers of the community once or twice a week and while waiting for their cans to be emptied and washed the patrons have an opportunity to converse with the buttermaker. How much more is accomplished if the latter is interested in what each of his patrons are doing. By hearing the experiences of each he can profit and gradually become a benefactor to the dairy industry. It is this promotion of friendship and mutual help that tends to make a success of any line of work, and wherever we find harmony between manufacturer and producer we are sure to find success. Probably the closest relationship which exists between the creamery patron and the creamery is with reference to the production of clean milk and cream. This intimacy exists because of the fact that it is absolutely impossible to make a high grade of butter from cream that has had improper care on the farm. You are probably aware of the great value of cream and butter for human food if produced in a sanitary way, but you also know that dairy products if handled in an unclean manner are the most dangerous foods that man can consume. The buttermaker who has been schooled all his life in the care and handling of milk and cream can well be considered a worthy adviser of the producer. He understands the different fermentations which take place in cream and milk when handled in an improper manner. He can instruct the farmer in regard to cooling and aerating the milk or cream as quickly as possible after drawn, and explain why it is better to keep the cream which is only delivered three times a week, in a cold tank of water rather than placing it in a can in the barn or wood shed. Quality of butter made by a creamery can be determined with considerable certainty by visiting the homes of its patrons. One need not inspect the plant at all to place an approximate score on its products. If we find the patrons milking good, healthy herds and the milk handled in a sanitary manner, we can at once give the butter a fairly high score. On the other hand, if the cows are dirty and are kept in a dark unventilated barn we can conclude that the butter which comes from the factory on the hill, no matter how good the buttermaker or machinery, is not first-class and would not be counted among the prize tubs of this convention. If the farmer could be made to understand the importance of these things there would be less occasion for the explosion of cans due to gassy fermentations in the cream. Instead of spending so much time in the factory trying to make good butter out of poor cream it would be much more economical to hire a man to visit the farms as often as possible and improve the raw product which is the real source of poor butter.

However, there are many other ways in which the creameryman is related to the patron. Every creamery must have enough of the raw product to pay the operating expenses and the necessary dividends. The lack of enough cream to supply the demand is one of the important reasons why we find so many creameries taking an active interest in their patrons. The buttermaker in the small creamery as the field man in the large plant could devote a portion of his time to no better advantage than familiarizing himself with the conditions existing on the farms of his patrons. By supplying himself with the best literature on dairying and then spreading his information broadcast among the patrons a great deal of enthusiasm could be aroused.

Statistics show that since 1875 the number of milch cows in the United States has increased from 11,000,000 to 22,000,000, which means an increase of 100 per cent. Not alone has the number of cows doubled in the past thirty-five years, but their valuation per head has increased from $25.74 to $35.79, making the total valuation of dairy cows in the United States $780,308,000. But the chart also shows us that the population has increased much more rapidly during the same time. In 1875 the United States had 38,000,000 people. It now has 95,000,000, an increase of 150 per cent. Along with this increase in population and number of cows we find the average price of butter during this time has increased one-fourth which means that the demand for dairy products has increased in spite of the increase in the production of these products.

Another great indication for the demand of dairying is found by a comparison of imports and exports of dairy products during the past ten years. In 1899 the population of the United States was 76,000,000. The imports were valued at $1,619,693, while the exports were valued at $7,628,211, or nearly five times the imports. In 1909 the population has increased to 95,000,000; the imports increased to $6,031,499, and the exports decreased to $3,500,405. This reversion of imports and exports shows that we are rapidly falling behind in our supply and that the United States is sending to foreign nations $8,540,612 for dairy products which should be produced here. The population is beginning to overtake the production in this country. We have doubled our population four times a century. By twenty-five years from now there will be as many people living and asking for food at one time as have lived up to this time since America was discovered. Instead of producing $800,000,000 of dairy products per year we must produce many times more.

Having considered briefly the status of dairying in the United States, let us now see what our own state is doing along this line. As you all know Iowa produces more butter than any other state in the Union. From the last dairy commissioner's report we find that the butter production of Iowa has increased from 87,972,470 pounds in 1899 to 101,907,315 pounds in 1909, and the average price per pound advanced six cents making the total valuation last year $26,495,902 and the total dairy products aggregate $60,000,000.

But what is the reason for this increase of interest in dairying? Probably the most important reason is the value of milk, butter and cheese for human food. Although the consumption of milk per capita is very low, yet the infants are practically reared on milk until one year of age. Experiments recently carried on at the Missouri station show the value of milk as a human food. One cow in the University herd gave as much food material in her milk in one year as was contained in the carcasses of four beef steers each weighing 1,250 pounds, which would even exceed this proportion if the loss incurred by the preparation of the meat was taken into consideration.

The advantage of the dairy cow over the beef steer is shown very forcibly in this case. It is evident that the food necessary to raise four beef steers to three years of age and bring them to a weight of 1,250 pounds would greatly exceed that necessary to maintain a cow giving this amount of milk. When we take into consideration the roughage consumed by the cow the cheapness of milk as a food compared to beef is evident.

Another important reason for the advancement of dairying is the realization of farmers that it is absolutely necessary to maintain the fertility of the soil. It is well known that grain farming is the greatest drain on the soil and that a good Iowa farm can be practically ruined in a comparatively short time. The chart which I have shows the comparative value of fertility removed in one ton of grain, beef and pork, to that removed in one ton of butter. One ton of corn valued at $15.74 removes $5.95 of fertility; one ton of oats worth $22.89 removes $7.22; one ton of wheat worth $25.64 removes $7.86; one ton of timothy hay worth $12.00 removes $5.11; one ton of clover hay worth $10.00 removes $7.95; one ton of beef worth $103.20 removes $8.04; one ton of pork worth $111.40 removes $5.70, and one ton of butter worth $476.00 removes 70 cents. This valuation of butter is based on the uniform price for the last ten years as sold on the Chicago markets. This great saving is due to the fact that a large part of the fertilizing elements which the cow eats in her food return to the soil through the manure. On a well conducted farm seventy pounds of butter may be produced per acre, which would contain forty-two one-hundredths of a cent's worth of nitrogen and phosphorus. In other words, if nothing but butter were sold it would take 238 years to remove as much value in fertility as the grain farmer removes in one year selling an average grain crop. This shows exactly what we are doing in our trade with the Danes at the present time. Which is better for American agriculture, to lose this prosperity and fertility by selling our grain to the Danes or converting it ourselves into butter containing little or more fertility at twenty-five times the price per pound? The Dane is the best farmer in the world and the secret of his success is intensive dairy farming. Twenty-five years ago Denmark could hardly hold her own as a grain-producing nation, but she changed to dairy farming and is today the most prosperous agricultural country in the world.

With the rapidly increasing price of land in Iowa and the advance in the price of all foods it is evident that we must follow in the footsteps of other nations. In Holland and the Jersey and Guernsey Islands we find the land selling from $500.00 to $1,500 an acre. We at once inquire what makes this land so valuable and what kind of farming can bring the owner a profit. Investigations show that these are the greatest dairy sections of the world. Iowa land has in many places reached the $200.00 mark, which means that the successful farmer must abandon the slipshod methods and take up intensive farming in a business-like way.

In order to meet this growing demand for dairy products the farmer must do one of two things. He must either double the number of cows he milks or he must double the production of each animal. If he doubles the number of cows he will necessarily have to double the food consumed. But let us consider for a moment which is the better plan to follow.

The average cow at present in Iowa is producing less than 150 pounds of butterfat, which is barely enough to pay for the food and in many instances she is an actual loss to her owner financially, excluding the work of milking and caring for her. It at once becomes evident that the only practical way to meet the demand for these products is to double the production of each cow. Of course this will require a great deal of work on the part of the breeder, but it can undoubtedly be accomplished. The first thing for the farmer to do, who is interested in improving his dairy herd, is to purchase a scale and Babcock tester. These can be secured of any creamery supply company at a nominal cost and on the average farm will pay for themselves many times over the first year. However, before one attempts to test his own herd he should become thoroughly familiar with the operation of the test. The fat test of milk like all other tests is worse than nothing if the operator is not competent. Therefore directions for milk testing should be secured from the experiment station and studied very carefully, or better yet one of the boys should be sent to the two weeks short course in dairying at the Iowa State College the first of January. After having thorough knowledge of the test it is time to begin the work of weighing and testing the milk from each cow as often as possible during the year or month and computing the pounds of fat. The question as to how often a cow should be tested depends upon the time the farmer has to devote to this work. However, each cow should be tested once each month and the oftener the better. The test should last about two days each time and the milk accurately weighed at each milking. It is also important to have the cow's milked dry the milking preceding the day that the test begins. Along with this record of the number of pounds of milk and butterfat produced should be kept a feeding record. Many cows seem to give large quantities of milk with fairly high tests, but not all of these are economical producers. By economical producers I mean cows whose products sold exceed the cost of feed by a good margin. We often find a fairly high producing cow which does not pay for her feed. The feeding record should be kept and compared to the milk flow from time to time. If the flow goes down when certain feeds are fed the ration should be changed in such a way as to make the maximum flow of milk in the most economical manner. The best dairymen find that the cows in their herds vary a great deal. Some cows produce large quantities of milk on rations which do not agree with others at all. It is only by this close study of the individuality of each animal that the herd can be placed on a paying basis. Having weighed and tested the milk, weeded out the unprofitable animals and fed those remaining, the proper ration, the next suggestion which I have to make is that the dairymen be encouraged to use good pure bred sires. The initial cost of such an animal may exceed the cost of a grade or scrub three or four times, but the returns will repay this cost many times over. The pure bred sire is more prepotent and his offspring, especially if line breeding is practiced soon bring up the herd to a profitable basis. Of course the sire should be a good individual and have the characteristics of the dairy animal. He should also be tried and should have both ancestors and offspring of high-producing ability.

To overcome these conditions in Iowa we find many forces arising. Co-operation is beginning to take the place of the single man. The creameries are beginning to take an interest in the cow and her care as well as the manufacture of her products. The cow owners are also beginning to organize themselves into testing associations, and the state officials are assisting by the increase of appropriations for the furthering of dairy interests. With the hearty co-operation of all interested the dairy industry in Iowa should have a bright future.

Mr. Barney: I have an announcement to make. In place of Governor Carroll this evening we will have an address by Mr. Glover, of Hoard's Dairyman, and I assure you that you will miss an opportunity if you do not hear him.

Mr. Glover: I would have liked to have heard Mr. Estell tell us more about the relation of the buttermaker to the dairyman. I don't believe that the average buttermaker as a rule realizes the important position he holds in relation to the dairy farm. The dairyman's interests are his interests and they should be mutual. There should be a greater degree of co-operation between the two. I had the privilege of being an inspector for two years and very few times did I find the buttermaker taking the personal interest in his patrons. I am from Wisconsin. Condensaries are coming in and the buttermakers are asking what to do. The condensed milk factories are paying as much as the creameries, they say, and the farmer is asking what to do. Who is to blame? The buttermaker, because he has not told them the value of the skim-milk returned from the creamery and the fertility which returns to the soil. He has not told them that they get from 30c to 50c a hundred out of their skim-milk. How many buttermakers are holding that up to their patrons? Stay by your patron, buttermakers, and if you work for his interest I want to tell you that your interests will take care of themselves.

Mr. Barney: I agree with Mr. Glover, and I want to go a little further. I have been waiting for the opportunity to talk a little to some of the managers of the creameries. As I see it, in Iowa managers do not give their buttermakers time enough to get next to the patron. If they would give them more help so they could get out among their patrons more they would get much better results.

Mr. Stephenson: We are now about 30 minutes late, so we will have to adjourn. Remember that this afternoon at 2 o'clock we have a very interesting program, and let us all get here on time.

Adjournment.

WEDNESDAY AFTERNOON, 2 O'CLOCK.

The President: I have a few announcements to make. I will have to ask your indulgence so far as the Committee on Legislation is concerned. I will announce the following committees: Resolutions, Judge W. B. Quarton, R. B. Young, H. E. Fowler; auditing, F. A. Leighton, Carl Walker and Guy Thomas.

I have the pleasure of introducing the chief of the United States Dairy Division, of Washington, Hon. B. H. Rawl.

ADDRESS.

HON. B. H. RAWL, WASHINGTON, D. C.

Ladies and Gentlemen and Fellow Dairymen.—I want to say just a word to this dairy association. I can not resist the desire to compliment the state and the dairymen and the officers of this association on this magnificent dairy show that you have here. I have seen few shows of this kind in any state that have been as good and it is certainly a splendid thing for the dairy interests of Iowa.

There are a few problems that I am interested in that apply to this state, and I am going to talk for a little while about these problems. I don't know whether I am talking to farmers, producers of dairy products or to manufacturers, but I assume that most of you are interested in both. You have now in the state about 542 creameries. You are producing about 100,000,000 pounds of butter per year according to your last report. The Chicago market for the year 1909 quoted a difference between extras and firsts of 3½ cents. Now suppose that your butter—your 100,000,000 pounds, sold for 1 cent a pound on an average less than extras. That would mean $1,000,000. Two cents a pound would mean $2,000,000, 3 cents $3,000,000, etc. But you say all your butter was not firsts, and I say you are right. I don't know how much of it sold as extras, neither do I know how much sold as firsts in Iowa, Wisconsin or any other state, but I do know that when you go into these markets, Chicago, New York or any other large market, that there is a large quantity of what we may term firsts or even lower. It comes from somewhere, and I have never seen any place that furnishes all of either quality. You are not furnishing all firsts, or extras, but I believe that your state is furnishing a great deal too much of the firsts and seconds, and you are furnishing it at a tremendous sacrifice. Let us analyze the situation a little further. I will ask you, are there creameries in the state that are furnishing large quantities of this second grade butter? I believe I get the answer, yes. There are some creameries that are producing a small amount of second grade, and some are producing a large amount of it. What does this mean to the creamery producing 100,000 pounds? It means $1,000. That creamery has failed to receive $1,000 because of what—because of the inferior quality of the goods sold. Two cents under means $2,000. Here is a point that we must think about. I want to ask every one of you interested in a creamery. Do you know that your creamery is not losing $1,000 a year that it should have, or $2,000 or $3,000?

Let us take this a little further. What are the causes of this loss? As I said before, it is not because of a lack of interest; not because of leaks in your process of manufacture. What, then, is the cause of this. Is it the creamery's fault? I say that it is and it isn't. The responsibility does not rest entirely upon the creamery for the simple reason that the raw material is not always of sufficiently good quality to make butter that will sell for extras, but if it is and the quality is impaired during its manufacture then the creamery is to blame. How many times is that the case? How many creameries have you in the state that receives good, clean, sweet cream and sells butter in Chicago or New York that will grade firsts or seconds? I venture to say it doesn't occur very often. On the other hand, suppose your creamery receives something that is not first class to begin with, do you believe your manager or buttermaker can make from it a first class butter? If you can, then you can offer to the dairy industry of this country a solution to this problem that is costing the producers of butter billions of dollars every year.

Why should we take second class material to begin with? It takes the same pound of animal fat, the same pound of substance to produce an article that will sell as seconds as it does one that will sell as extras. Almost half, if not more than half, of the butter-fat sold in milk is sold at a reduced price because it is inferior. Why should any buttermaker be called on to make a first class product out of a second class material? You have no right to ask it. Now then, is Iowa losing $1,000,000 a year on her butter? I don't know, but I do know that she is losing a big sum, and I know that the poor raw material received at your creameries is responsible for an enormous part of this loss.

What does this loss mean to the farmer? Suppose the average herd of 10 cows produces 200 pounds of butter per cow per year. This poor raw material costs that farmer $40 a year. He loses this $40 because his butter-fat sold for 2 cents a pound less than it should have sold for. Where a farmer has 10 cows that will produce 300 pounds and he sells poor material he loses $60. Is $60 worth anything to you, farmers? Is it a consideration sufficiently important to bring about a remedy to this problem? I say 300 pound cows, for there ought not be a dairyman in Iowa who should receive loss from his cows. By the way, I might say that while last year the average difference between extras and firsts was 3½ cents, the discrimination is getting closer and the difference in price wider. Can the first-class dairymen—the dairymen who own 10 good cows, afford to lose $120 or even $60 or even $40 by not taking proper care of his material?

There are three things, three simple things you can do to prevent it. First, cleanliness; keep it clean while on the farm. I hear somebody say the hand separator has caused this. It hasn't. It has nothing to do with it. The hand separator is here to stay. It is a thoroughly practical thing so long as it is kept clean and so long as the cream is delivered before it gets sour and decomposed. The second thing to do to avoid poor cream is to cool it and keep it cool, and the third way to prevent this loss is to deliver it to the creamery in a clean, sweet condition. Farmers are going to use the hand separator until we get something better if we ever do.

There are two classes of farmers. One class is pushing his herd to the front; he is looking for something better; for labor-saving devices; to produce a better product more profitably. There are some like that in every community. There is another class that is not giving consideration to this improvement. He sells his product for what it will bring. There is a world of indifference among farmers of all kinds. Right here is where the creamery comes in for a great share of the responsibility. So long as the creamery pays to the farmer that brings in bad cream as much as he does to the one who brings in good cream, just so long will we have present conditions to contend with. It is not fair, it is not just to pay as much to the careless farmer who brings in second class cream as to the one who brings in a first class cream. It isn't a square deal.

Are you a farmer? If you are, let me ask you. If your creamery will discriminate to the extent of 2 cents to 3 cents a pound, and you happen to be one that is discriminated against, are you willing to stand by your creamery and try to improve your product, or will you cross over to a neighboring town and say here is a man who will buy my cream? The creameries are afraid to do it. They are afraid to come out and take this stand although they know it is right. They know you don't deserve as much for your poor material. Let us come together on this question. There is no reason for this discrimination. The conditions that make for good material are not such that the average farmer can not comply with them. There is no reason why your 100,000 pound creamery or your 50,000 pound creamery should not sell every pound of its butter for top prices. There are creameries in the east that get cream sweet enough that it can be pasteurized and shipped 200 miles and sold as sweet cream at 40 cents a pound. I am not sure but what there is an opportunity right here in this vicinity for the selling of more of your butter-fat in the form of products that are more valuable. But in order to do that it must be of high quality. It must be delivered to your creamery in such condition that it can be handled and re-shipped to the market in a sweet condition.

In order to bring this about I believe the creameries should provide hauling facilities by which they can control the time you can keep cream on your farm. There are other factors that come in for consideration. You buttermakers must have proper methods in your creameries. You must have sanitary conditions. You must have modern methods. The creamery is not relieved of its responsibility. In fact, of late we have been calling on the creamery to solve this problem of quality and they can do it, but they never will solve it until the raw material comes to them in the proper condition. To bring this about the creamery should be able to say to the man that produces good milk or cream, "I will give you two, three or four cents premium," and to the one who delivers an unclean, sour product, "I will have to pay you two, three or four cents less."

There has been a movement started in your state that is highly commendable. It is a combination of some certain creameries for the employment of skilled help to visit and work with the members of these different creameries and overcome these difficulties. I believe that we will find out that there are many creameries losing as much as from $1,000 to $3,000 annually from this very cause and that the members will employ the services of a man capable to overcome these problems, if the community is desirous of overcoming it. In addition to this work, our department in co-operation with your state department and your dairy school have taken one individual creamery and put a man at that creamery to see whether or not it is possible to go out among the farmers and help them to overcome the things that are now making their goods sell for less than it should be worth. We believe it can be done. We want to know what it will cost to do it, and we are trying to find out.

You have about 50 per cent of your dairymen who are keeping cows that are not sufficiently good to warrant their keep, and there are thousands of dairymen in this and other states who are milking cows that are not paying them one red cent. No man can afford to stay in the dairy business with cattle that will not produce 300 pounds of butter fat a year. If you haven't that kind you ought to get them or get out of the business, as it is only a question of time when conditions in the United States are going to be such as to absolutely force you out. When I find a man that has animals producing 150, 175 or 200 pounds I want to help him a little. I just want to show him a few of his own figures. I want to show him how much feed that one of his animals will consume. I want to show him about what he will get in return. Furthermore, there is the man we have to either convert or destroy as a dairyman. We have to do one of the two because he is a man who will sell to the creamery anything the creamery will buy. I have known personally a number of that class and to save my soul I can't understand how these men will stay in the dairy business and milk cows that give 150 pounds of fat a year. We have got to handle that man. If we can get him on his own ground; if we can go on his own farm and get some of the figures from his own animals so we can tell him how much feed the animals eat, what it costs to feed them and exactly what he gets out of them I believe we can convert him, and that is the kind of work this department is interested in, and we hope that this will show us the way. I don't believe too much in philanthropy; I don't believe too much in depending on the state or government. I believe we ought to help ourselves.

Studying the dairy industry from a national standpoint, we find conditions are not standing still, and I have little hopes for the dairyman who does not handle his dairy as a strictly business proposition. I believe within the next ten years we are going to see in many sections fewer farms because the conditions in existence now are not such as to be conducive to systematic and intelligent farming. Conditions are changing and dairymen must also change. I believe that Iowa has taken up the proper work and that it will result in the raising of the quality of your butter and help us in the solution of our farm questions. I thank you.

Mr. Barney: I am sure you have all been much interested in this splendid address. I don't think he has made anything too strong. We have a few minutes now for discussion.

Member: I would like to ask a question. I have been interested in the creamery business for twenty-five years and am at present located at LaPorte. We are running on the hand separator system and we have wagons to cover the entire territory, but we have, and I think it is the same in almost all towns along the railroad, men who are buying cream as a side line to their other business, whatever that may be. These centralizers will come in this way and if you say a word to one of your patrons about poor cream he will take it to one of these buyers and get as much for it as you pay for good quality. I wish to ask how we are going to protect ourselves against this kind of competition? How are we going to prevent the farmers from holding their cream from a week to ten days when another company will take it at a top price?

Mr. Rawl: I don't propose to offer a solution for every local condition that may exist. I say that it is right that cream should be paid for by grade, and it is wrong to pay for it in any other way. Let us ask ourselves if we have done what we could to explain to these patrons what it means to handle poor cream. Again, have not the creameries as a whole taken the sweet and the sour, mixed it all together and paid the market price for it? Have they done what they could to get their patrons to understand the situation. I believe in mutual agreement. I believe the creamery and the farmer must talk it over and come to a better understanding. We have unfair creamery people in the business, it is true, but let us ourselves do all we can to make the farmer understand that in order for him to receive the highest price for his cream it must be of the highest quality.

Member: You say that the other party who accepts poor cream can't get any more for his butter than we can. Butter is being sold today in Waterloo and Cedar Rapids that if shipped would not bring within 5c a pound as much as it does here.

Mr. Ross: I heartily agree with Mr. Rawl when he advocates the grading of cream, and it is working out successfully wherever it is adopted. As an illustration I will cite you to a creamery in a town where there are three cream stations. This creamery made a difference of 3c a pound between perfectly sweet and other cream. When he began he had 40 cream and about 20 whole-milk patrons. There were only five of the 41 that got 3c more than the other fellows at first. At the end of four months, however, only four did not receive the highest price. These patrons had access to the stations but it wasn't long until the stations only got the bad cream. I would say to the gentleman from LaPorte, if these stations will take the bad cream and pay a top price for it, let them have it all. The more poor cream they get the quicker they will go out of business.

Member: While they are meeting your prices, at a great many other places they pay below and as long as they do that they won't have to go out of business.

Mr. Rawl: Have you ever tried to offer two prices for sweet and sour cream?

Member: I did last year.

Mr. Rawl: I believe you should give that matter a thorough trial before you give it up.

Member: I believe it would be all right if the creamery had full control. But let Mrs. Jones receive 26c for good cream. Mrs. Smith may come in with some not so good and you pay her 2c less. It will require a whole lot of talking to get her to understand why her cream was not as good as Mrs. Jones'.

Mr. Stephenson: It seems to me that there must be lots of people throughout the state in the creamery business who are chicken-hearted. We all know it is wrong to take poor material and pay top prices for it. We have a right to reject it. I have been a buttermaker for many years. A little over two years ago there were three cream stations came into my town. They put in sixteen cream separators, and they operated them for a time. Today there isn't a single one of our patrons with a hand separator. They tried to keep their cream a week. I said, "Gentlemen, you can't do it." They came in with their cream and I couldn't take it. "Why?" they asked. "Because," I told them, "our butter is sold on its merits. One can of your cream will spoil a vat of our cream." "Very well, then, we will take it up town." Before they went I took them into the creamery and had them examine a sample of cream from the vat, and then a sample of their own can. When asked which cream they would rather use, they said, "Yours, of course." To some patrons you can say you must do so and so, and to others you can't but you can bring them to see where it is to their interest to bring to the creamery a pure sweet produce. I say it can be done.

Mr. Barney: I am sorry to close this interesting discussion, but we have another address. Mr. J. J. Ross, who needs no introduction:

INSPECTION OF IOWA CREAMERIES.

J. J. ROSS, IOWA FALLS, IOWA.

When our secretary asked me to prepare an address for this convention, I found myself at a loss to decide on a subject that would be of interest to both dairymen and buttermakers, and at the same time select a subject that had not grown old from having been handled from year to year at these annual conventions. I finally decided to try and interest you people for a few minutes on Inspection of Iowa Creameries, and the duties of our creamery inspectors, and possibly to make a few suggestions that in my opinion would be beneficial to the betterment of the one great important industry in which we are all interested, and which we are all striving to develop and promote, that is the dairy interests of this great state of ours.

I am certainly glad to see so large a number of dairymen present, buttermakers as well but the buttermakers have always been a loyal bunch and we naturally expect them. It is certainly gratifying to see so large attendance at this our thirty-fourth annual convention. It goes to show that there is becoming a greater interest taken in dairying, that the producers of the raw material are waking up and are being made acquainted with the fact that there is no other branch of diversified farming so important to the progress of a community.

They are beginning to understand that the all important problem of preserving the soil can be best solved by the liberal use of barnyard manure. Not only does the dairy herd make this possible, but dairying is more remunerative than any other branch of farming when properly carried out.

The magnitude of the dairy business in Iowa can perhaps be best understood when it is learned that the dairy commissioners' report for the year 1910 will show 562 creameries, an increase of 10 creameries over last year, and we learn that there are 5 more under construction and will be in operation before the first of the year. Besides the 562 creameries there are three condensed milk factories and forty-three cheese factories. 102,000,000 pounds of butter was made in the state during the year; 1,586,000 cows were milked and 800,000 cows furnished milk exclusively for creameries. The total value of our dairy products in Iowa for this year is estimated to be $50,000,000. Such a vast sum is hard to conceive but when it is compared with our other resources, some idea of what is means may be obtained.

For instance, it is more than 70 per cent of the total production of gold in the United States for the same period, nearly three times the amount of gold mined in California, the leading gold producing state in the Union. The amount is enough to completely equip four first class battle ships for the United States navy, and then have a million dollars left for spending money.

It is learned that Iowa produces more butter than any other equal surface of the Globe except Denmark and Holland.

In addition to the 562 creameries, three cheese factories and three condensed milk factories, there are about 800 cream stations where cream is bought and shipped to churning plants. In view of these facts just mentioned, I think you will agree with me when I say that with only two creamery inspectors in the state the work keeps us some busy. And will add that in case there are some who think that they are being neglected or are not receiving as much help from the department as they should, these facts will readily show the reason. When the dairy commission of this state was originated, it was for the purpose of enforcement of the dairy laws on the statute books at that time and inspection and instruction of all creameries, cheese factories, milk depots, cream stations, and all other places where any article of dairy products were kept, stored, manufactured or sold. The dairy laws were enacted for the purpose of suppressing fraud and to protect all parties who were engaged in the handling or otherwise of any dairy product in the state of Iowa. The commissioner was empowered to appoint one assistant commissioner to assist him in his duties and a few years later he was given the second assistant.

Since this work was first taken up in the state there have been a great many changes in the creamery business, and we find the work expected of the inspectors today to be of a different character than what it was a decade ago. For instance, we find ten years ago there were 994 creameries nearly all of which were co-operative or independent. At that time 90 per cent of the creamery butter in the state was made from whole milk. At the present time we have only 562 creameries of which only 51 or about 10 per cent of them are whole milk. We also find that at the present time there are two distinct creamery systems in the state. I refer to the local creameries such as the independent and co-operative and the centralizing creameries.

There are at present 524 local creameries and 38 centralizing creameries in Iowa. About one-third of the butter made in the state is the output of these 38 creameries, and all but about 10 per cent of the entire make of butter is what is termed gathered cream or hand separator goods. During this gradual change from the whole milk creamery system to the hand separator system, the attention of the dairy commissioner's department has been called to the inferior quality of cream produced. Previous to this time the state inspectors gave more time and attention to the sanitary conditions of creameries with only a few complaints of poor quality, but as the hand separator system gained ground and creamery patrons seemed to gradually get more negligent of the care and handling of cream, there was a lot of complaint from the creameries about poor quality and we found that the butter manufactured was gradually deteriorating. At first there was no little criticism of the hand separators, but in time nearly all agreed that the separators were a good thing for the farmer. They also came to the conclusion that just as good butter could be made from cream skimmed at the farm as from that skimmed at the creamery if the cream was properly cared for and delivered to the creamery in as good condition as it was necessary to deliver the milk.

At the present time there is no complaint about the hand separators as it is realized they have come to stay. But there is a lot of complaint about the poor quality of cream offered for sale and in my opinion this is one of the most important questions that is confronting the dairy interests today. When an inspector visits a creamery today for the purpose of making an inspection and gets to the point where he asks the buttermaker what his chief trouble is invariably the answer will be "poor quality of cream." They tell us that if it is possible they would like to have us go out and visit some of their patrons and try to persuade them to improve the quality of their cream. Very frequently we have complaints come to the office asking for an inspector to come at once and go through their cream. We find by investigations covering the entire state where cream is sold to creameries or delivered to cream stations, that not all the cream is bad. Indeed, we find only a small percentage to be in bad condition. The greater portion being sold is of good quality but there is possibly about twenty per cent of the cream offered for sale that is poor and in most cases this is mixed with the good cream thereby injuring the entire amount.

Going farther to find the cause of this poor cream it is found invariably due to carelessness on the part of the patron, such as in using unclean separators and the mixing of warm cream with cold. These are very simple and easy matters to remedy if once we could bring the parties to understand the necessity of delivering only first class cream.

A serious complaint of the violation of the dairy laws is in reference to the acts passed by the thirty-first general assembly, especially that section referring to the manipulation of the Babcock test by under or over reading the same. In fact complaints are so numerous that I believe were it possible for the state to employ a dozen inspectors they would all have been kept busy looking after complaints of this kind during the past three or four months. As it was we found ourselves two or three weeks behind and at the same time both inspectors were investigating the violation of this statute. There have been a number of prosecutions made and a large number of complaints investigated where we could secure no direct evidence of a violation. The majority of the complaints came from cream stations although quite a number came in accusing the creameries themselves of over reading. I believe that this law is being more generally violated all over the state than any of the other dairy laws. The reason that there were not more cases brought against violations of this kind was because of a lack of help in the department. In my opinion this practice of manipulating the test of cream by overreading is one of the most dishonest methods of competition that was ever practiced in any business, and one that should be suppressed if there is any way under the sun of suppressing it.

We find the creameries in Iowa quite satisfactory as regards sanitation. There are a few instances where the buildings are old but we have the assurance that they will soon be rebuilt and it is gratifying indeed to see that where a creamery is replaced with a new building they are much more substantial and lasting than before. Nearly all of the new creameries that have been built during the last two or three years are exceptionally good, usually being made of brick or cement blocks and constructed in such a manner as to make them convenient and comfortable. We usually find the creamery machinery in good condition and if not the board of directors and managers are always willing to do all in their power to make everything satisfactory.

At this time I would like to submit a few suggestions that in my opinion might help to eliminate some of the trouble that we are having. In the first place, I wish to refer especially to the quality of cream and milk which is being offered for sale. There has been so much said and so many suggestions made as to how to overcome this trouble that it seems like an old story but at the same time it is very important and as yet unsettled. Numerous plans have been introduced at different times but as yet we are still having all kinds of trouble with poor quality of milk and cream. We often hear the question asked "why don't the inspectors do their duty and put a stop to the selling of this poor cream?" Gentlemen, I do not believe that all the legislation that could be enacted and placed upon our statute books would entirely eliminate this trouble. If it did, in my opinion the cream business would be almost eliminated also. Some have suggested a law making it necessary to deliver the cream to the creamery or station every alternate day. It appears very plain to me that a law of this kind would be discriminatory for there are a number of patrons who could keep their cream four or five days in as good condition as other patrons could keep it over night. I believe that the only way that we will get relief is through education, and in order to do this successfully it is especially necessary for the manufacturers of butter, both of the local and centralizing creameries, to get together and work harmoniously. Both systems are struggling for the same result and that is quality, and better quality we must have if we would protect our dairy interests from that gigantic fraud oleomargarine. It is not only necessary that these two systems work harmoniously for quality but for all other things that would lead to the advancement of dairying in this state.

Since the introduction of the centralizing creamery in this state there has existed a sort of an ill will on the part of the local plants toward the larger concerns—there has been a lot of imagined wrong done them on the part of the local creameries, but I want to say to you gentlemen that since I have had the opportunity to get acquainted with the centralizing creamery system I have materially changed my mind. Not that I wish to be quoted as saying that they are the better system or that the local creamery system is the better. Each of the creamery systems have a place in this state and they are both working for the same results. We find that the larger concerns are just as anxious to improve the quality as are the smaller creameries and I can assure you that they are as eager to prosecute the violation of manipulation of the cream tests as you are, even though it be one of their own agents.

Indeed, we have more complaints from the large plants telling us of improper work done by their own agents than comes from the local plants, and they are just as eager to see them prosecuted for it means a loss to them when the operator is short. And I can truthfully say that I do not believe there is a case in all our investigations where I thought the operator was authorized by the management to manipulate the test in any way.

The department received a letter a short time ago from the manager of one of the large centralizing creameries asking us to investigate a station of theirs where he says he thinks the operator is overreading the test for the purpose of putting the local creamery out of business. Letters of this kind and other communications have led us to believe their intentions are not as bad as are sometimes reported. I can see no reason why the two systems cannot co-operate and work together for the purpose of obtaining better results in way of raw material. Very frequently we get complaints from creameries telling us that when they reject a can of bad cream the patron takes over to the station and sells it and invariably the local plants lose a patron while the other people gain one.

I am a firm believer in organization, and I believe if we could organize the state into districts and have improvement associations similar to the one now in operation in northern Iowa that it would only be a short time until most of our trouble along the lines of quality would cease. There is certainly a good work being done in northern Iowa and I believe all that is necessary to have a number of similar organizations is to make it known to the public. The question of providing funds for carrying on this work seems to be the most difficult part in forming organizations of this kind but I'm sure that when the people are made aware of the benefits derived through work of this kind they will not hesitate to respond with the necessary funds.

Relative to the trouble being caused by manipulating the test I will say that at the next session of the legislature there will be a bill introduced for a law similar to the one in Kansas and Nebraska (and I think Minnesota has the same), making it necessary for all persons who operate the Babcock test or any other contrivance used to determine the butter-fat content in milk or cream, to secure a license from the state dairy commission and these licenses are to be issued only after it is found by an examination that the party is qualified to operate the Babcock. Whosoever shall violate the section relative to testing milk and cream shall not only be liable to a fine but his license will be immediately revoked.

I believe a law of this kind would be very effective. There are a number of other bills which will undoubtedly be introduced at the next session of our legislature for the betterment of our dairy industry. And I want to say to the members of this association as well as all buttermakers, creamery secretaries and managers of creameries and all others interested in the devlopment of dairying in Iowa (the most important industry of our farming communities), that when the legislature meets in Des Moines next winter remember we dairy men have a right to be hard from and are entitled to a great deal more help than we are receiving. In order for us to be recognized it will be necessary for each and every one of us to get busy with our senators and representatives, tell them what we want and make it so strong that they will sit up and take notice that the dairymen of Iowa are no longer weak and are determined to be recognized as an important factor in the welfare of the state.

To the buttermakers of the state, especially those who have exhibited butter at this convention, I wish to say that the average score is quite satisfactory, of course there are a few low scores. There always are more or less in all contests, and there is no disgrace in receiving a low score for we realize the conditions under which you have to work and I most urgently request that all of you improve every opportunity to enter these educational butter scoring contests. I am glad to learn that Professor Mortensen is going to conduct a four months' contest in connection with the school at Ames, this contest I understand is to be more instructive to the exhibitor than any other contest held in this state, in that every tub of butter received will be given a complete chemical analysis the result of which will be sent to the exhibitor together with criticism. I think there should be at least two hundred makers take advantage of this opportunity.

In closing I will say that the success of the creameries in this state and also the success of the dairy business in general depends upon the quality of raw material produced, and also upon the increased production of raw material. In like manner our country's greatness depends upon increasing the production of all farm products, from year to year, a result which not only furnishes our people with food but maintains the prosperity of our farming communities. Increase in production can come only through improved methods of agriculture and soil improvement and when it is considered that the dairy cow is the foundation for soil improvement and farming prosperity, her importance is best understood, and interest in her should not be confined to her owner. She is certainly an important factor in the development and prosperity of our country.

WEDNESDAY EVENING, 7:45.

The President: You will please come to order. For fear that there may be some here who were not present this morning, I want to make the announcement that Governor Carroll will speak tomorrow evening. I also want to announce that the Legislative Committee for the ensuing year will remain the same as last year, as follows: E. R. Shoemaker, Chairman; W. W. Marsh, Judge W. B. Quarton, Hon. B. F. Newberry, and F. A. Leighton.

We have with us tonight a gentleman representing a paper which has done and is doing a great work for the benefit of dairymen all over the country. Mr. A. J. Glover of Hoard's Dairymen will address you.

ADDRESS.

A. J. GLOVER, FT. ATKINSON, WIS.

Mr. Chairman, Ladies and Gentlemen.—It is not necessary for me to say that this meeting, this show, and this exhibition of dairy and farm machinery are very pleasing. I am not prepared to give you as good a talk as you deserve. In fact, I have had no preparation, but I do want to say as other speakers have said and will say that you are to be congratulated upon the splendid sentiment you are expressing here in behalf of the dairy cow. You have a young show, and you don't know where it will lead you. It is only the beginning, we hope, of something bigger and greater. I hope it will grow to be larger and better than the National dairy show. I know of no state whose people could become better dairymen than the people of Iowa. You have been feeding beef cattle and hogs, and I am glad to see that a new industry has been born among the people of Iowa.

In the taking up of the dairy cow, friends, you have a new thing. She will not stand the same treatment, the same care that your beef steer will. She has a different function to perform, and I want to dwell a little upon the function of he dairy cow. I do it for the reason that I have heard it remarked: "I don't believe in the dairy cow because she is not hardy. She has not a constitution that will withstand hardship and cold. She is weak." I want to analyze her to see if that is a true way to look at the dairy cow. In the first place, the dairy cow's function is to produce milk and not beef. In adapting herself to the eating of feeds and converting them into milk she is performing a function that is different than any other animal on the farm. She is a mother once a year, and motherhood requires special care at the time of parturition. The dairy cow gives up to you every day a large amount of nourishment. Does the beef steer? No. The steer utilizes his feed within his body, therefore the function is different and requires a different sort of treatment. The dairy cow wants a barn that is warm, well ventilated and well lighted. If you can't afford to give a dairy cow that kind of treatment, don't ever go into the dairy business. Stay out of it. If you can't make up your mind to give that dairy function the kind of care and feed it requires don't ever take up with the dairy cow, because she demands care and feed in keeping with her function. She will not return to you a profit if you don't give it to her. If you want an animal that can withstand cold and hardship, get a Shetland pony. This breed of horses was raised up north and can withstand cold. Their coats grow long and shaggy which protects them amply from rigorous winters of this latitude. But, practically speaking, they produce nothing; then of what value is their power to withstand cold and hardships?

Mr. Estel named a cow in his address that gave as much nutriment in one year as six steers weighing 1,250 pounds. A cow that will produce 300 pounds of fat a year is producing as much for human food as two good steers. In other words, a good dairy cow will do as much work as two beef steers, and yet we hear men say they can't afford to keep dairy cows because they are too delicate and lack constitution.

To illustrate function: Every machine has to be adjusted to its work, the sewing machine for making dresses, etc., and the mowing machine for cutting grass, and each has its peculiar form performing its specific duty. Would you select the running hound for a fighting dog? Would you select the draft horse for the race horse? Therefore, if you intend to enter the dairy business I would advise you to select the dairy bred cow and give her the care necessary for the production of large flows of milk, and that means a warm barn, well lighted and well ventilated and plenty of nutritious feed. I will not dwell longer upon the function of the dairy cow and the kind of care she requires, but will say a few words regarding her relation to the soil. The fertility of the soil is a thing that concerns us all.

In the making of milk the soil is required to give up some of its fertility. The crops grown for our live stock take from the soil some of the elements which are necessary for the making of milk. Through the work of investigators it has become possible to determine quite accurately how much fertility is required to produce a definite amount of milk. The chemist has analyzed the different feed stuffs and found that they are made up of different amounts of elements which have come from the soil and air. Milk has been analyzed and found to contain some of the same elements that are found in the soil. In order to present a concrete example, it becomes necessary to assume the amount of feed a good cow will consume in a year and the amount of milk she will produce. No dairyman should be satisfied to keep a cow unless she produces 7,000 or 8,000 pounds of milk throughout the year testing at least 3.8 per cent. A ration consisting of 30 pounds silage, 10 pounds clover hay, 5 pounds corn stover, 4 pounds corn chop, 3 pounds bran and 1 pound oil meal will supply ample nutrients for a cow to produce 8,000 pounds of 3.8 per cent milk in a year.

During the first part of the animal's lactation period, or when she is giving the largest flow of milk, it will require more grain than I have allowed for this period, but during the resting period, which will be from

6 to 8 weeks, she will not require very much, if any, grain if she has all the silage and clover hay she will consume. For the purpose of illustrating what I wish to bring out, I have not permitted the cow any pasture, but have fed her prepared feeds and it is fair to say that the amount of feed she would need in a year would be about 6 tons of silage, 2 tons of clover hay, 1,000 pounds of corn stover, 1,500 pounds corn chop, 1,000 pounds of bran and 300 pounds of oil meal. It is common knowledge that a certain amount of fertility has been taken from the soil to produce these feeds and that the soil does not contain an unlimited supply of some of these elements.

Dr. Hopkins of the University of Illinois, the best soil authority in the country, says that most Illinois soils lack in phosphorus and nitrogen, but that they are well supplied with all the other elements. It is generally held that there are 3 important elements of plant food, namely, nitrogen, phosphorus and potash. It will be interesting, I am sure, to know just how much of these elements is required to produce the amount of feed that I have assumed the cow would eat in producing 8,000 pounds of milk testing 3.8 per cent and maintain her body. It is not difficult now to obtain tables showing the amount of fertilizing elements in 1,000 pounds of the different feed stuffs and so I have calculated and given in the following table the amount of nitrogen, phosphorus and potash taken from the soil to produce the feed which a cow will consume in a year. The following table shows the different amounts of elements in the different amounts of feeds:

Name and Amt. of Feed	Lbs. Nitrogen	Lbs. Phosphorus	Lbs. Potash
6 tons corn silage	52	13	44
2 tons clover hay	80	22	75
1,000 lbs. corn stover	6	4	11
1500 lbs. corn chop	24	10	8
1000 lbs. bran	25	27	15
300 lbs. oil meal	20	6	4
Total	207	82	157

In other words, the soil must give up 207 pounds nitrogen, 82 pounds phosphorus and 157 pounds of potash to produce feed enough to sustain an animal making 8,000 pounds of 3.8 per cent milk a year. Part of these elements is used for the maintenance of the animal, some for the making of milk and the rest is returned to the soil in the form of manure. For practical purposes, it is safe to say that 25 per cent of the elements is used in the manufacture of milk and the other 75 per cent is used by the animal and returned in the manure. Upon this basis we may make the following table:

	Lbs. Nitrogen	Lbs. Phosphorus	Lbs. Potash
Fertility returned in manure	155	62	117
Fertility used in milk	51	20	40

If it were possible to preserve all the elements in the manure and if leeching and fermentation could be prevented it would be possible to return the above amount of fertility to the land, but every practical man knows that this is not possible under ordinary farm conditions. It has been found by investigators that if a person returns 60 per cent of the fertility in the manure voided by the cow, he is doing splendid work. If butterfat is sold from the farm and the skim milk returned for feeding, we get much of the fertility back. In the feeding of skim milk there is also loss and we cannot expect to return more than 60 per cent of the fertility or the elements required to make the milk, for there is waste in handling the skim milk. The calf or animal to which it is fed takes some of the elements for growth and the fertility in the manure from the animals gives up some of its fertility to leeching and fermentation. If we assume that 60 per cent of the fertilizing elements in the manure and skim milk is returned to the land, we get the following table:

	Lbs. Nitrogen	Lbs. Phosphorus	Lbs. Potash
Fertility returned to the soil in manure......	93	37	70
Fertility returned to the soil through skim-milk	18	7	7
Total fertility returned to the soil in manure and skim-mik	111	44	77

In the following table we show the amount of fertility used in the manufacture of 8,000 pounds of 3.8 per cent milk and the amount that we may reasonably expect to return to the soil and the loss.

	Lbs. Nitrogen	Lbs. Phosphorus	Lbs. Potash
Fertility used	207	82	156
Returned to soil in manure if skim-milk is fed	111	44	77
By subtracting we get a total loss of....	96	38	79
If the skim-milk is not returned to the farm we get an additional loss of	12	5	5
Added to the other loss we get	108	43	84

showing the total loss in fertility of the farm for each cow that will produce 8,000 pounds of 3.8 per cent milk per year.

If we had to go in the market and purchase these elements at commercial fertilizer prices they would cost in the neighborhood of $22.00 but fortunately for the dairyman, the nitrogen which costs 15 cents a pound in the market can be obtained from the air free and there is an unlimited supply. It becomes necessary, however, for him to grow some form of legumes such as clover or alfalfa or cowpeas for gathering this nitrogen from the air. This is no hardship, for every well regulated dairy farm should have a good supply of either clover or alfalfa or cow pea hay on hand. It is therefore safe to state that the farmer who practices the system of rotation and feeds legume hay, need pay no attention to the nitrogen supply of his farm.

Dr. Hopkins says that there is enough potash in the soil to last for many years and at the present time we need give it no consideration. In our calculation of the amount of fertility used, it will be noted that there are 43 pounds of phosphorus lost which can be obtained in the form of raw rock phosphate for the sum of 4 cents per pound or making the 43 pounds worth $1.72 the cost of fertility that should be purchased for every cow kept in the herd. This calculation may be a little high for the average cow, but it comes very cose to what Dr. Hopkins advocates in retaining and building a permanent system of agriculture. He states that a farmer who is raising maximum yields of corn, clover, oats and wheat should apply 250 pounds of the raw rock phosphate annually, or 1,000 pounds every four years. If we calculate that the raw rock phosphate furnishes phosphorus at 4 cents a pound, this amounts to $1.25 per year per acre. It should be remembered that in my calculation, assuming that the cow consumed a certain amount of feed, it would require $1.72 worth of phosphorus which is not very far from the figures advocated by Dr. Hopkins and based upon actual field tests. I feel, therefore, reasonably safe in stating that every dairyman should make it a point to purchase from $1.00 to $1.50 worth of raw rock phosphate for each cow that he keeps in order to keep his soil up and supply plant food for the production of maximum yields of crops.

I realize that many of the farmers in this community, purchase a considerable portion of their feed; in view of this it is not necessary to purchase nearly as much of the rock phosphate as where no feed is brought to the farm. In the following table is shown the amount of fertility contained in 1,000 pounds of bran and 300 pounds oil meal.

Amount and Name of Feed	Lbs. Nitrogen	Lbs. Phosphorus	Lbs. Potash
1,000 pounds bran	25	27	15
300 pounds oil meal	20	6	4
Total	45	33	19

If the above feeds are purchased, we bring to the farm 45 pounds of nitrogen, 33 pounds of phosphorus and 19 pounds of potash and after we take out the fertility used in the making of milk and make allowance for leeching and fermentation of the manure, we can calculate that about one-half of the fertility purchased in the bran and oil meal may be returned to the soil; or, roughly speaking, we would expect to return to the soil about 17 pounds of the phosphorus out of the 1,000 pounds of bran and 300 pounds of oil meal. Seventeen taken from forty-three leaves twenty-five, as the pounds of phosphorus that it is necessary to purchase per cow to keep the land up to its original fertility. It has been found by experiment that the best way to apply the rock phosphate is to plow it under with green material or mix it with barn-yard manure. Investigators have found that on the average, a ton of manure is worth $2.00 and that if ten cents worth of raw rock phosphate is mixed with it, it increases its value to $3.00.

It has been held by many that since dairying offers an opportunity for the rotation of crops, very little attention, if any, need be given the soil to keep up its fertility. No one questions that the rotation of crops is not beneficial to the soil; that it is one of the necessary things in a successful system of agriculture, but to state that rotation tends to increase the fertility is misleading in the extreme, for the increased crop yields that come by rotation should indicate that more fertility is being removed. We cannot make something from nothing. The rotation of crops puts the soil in better physical condition, it gives opportunity to grow crops which tend to liberate the fertility of the soil. The single crop system encourages the growth of weeds whose habits are the same as those of the crop; the weeds require fertility and therefore take nourishment which belongs to the plant, thus decreasing the yield of grain or whatever the crop may be. The single crop system tends towards the breeding of insects which are enemies of the crop.

I can well remember in southern Minnesota 25 to 30 years ago where the single crop system practiced with wheat gave the cinch bugs an opportunity to develop. In order to get rid of the cinch bugs, farmers quit growing wheat and went into live stock raising. Since this system of farming has been taken up I have heard little or nothing concerning the cinch bug. Fungus diseases develop when a single crop is grown year after year on the same soil. We have the flax sickness and clover sickness; smut destroys large quantities of the grain crop; the cowpea wilt, bean sick soil, etc., follow the single crop system. Plants also secrete from their roots substances which have a toxic effect upon the plants and for this reason it is necessary to change the crop.

Dairying offers an opportunity for the rotation of crops and raising those crops that are of direct benefit to the soil. For instance what would clover and alfalfa hay be worth if it were not for the animals of the farm. It is necessary to grow these crops, for the bacteria which live upon their roots gather nitrogen from the air and deposit it in the soil. The roots themselves supply a large amount of organic matter which is necessary, for in the decomposition of organic matter acids are secreted which liberate the plant food in the soil.

I might go on and mention other advantages of crop rotation, but these which I have given are sufficient to indicate its value to the soil and how dairying encourages and gives opportunity for the rotation of crops. It is plain that the dairy cow plays an important part in our agricultural operations and makes it possible to handle the soil in the best possible way. She not only returns a large percentage of fertility which the plants have removed from the land, but makes it possible to grow crops which are advantageous to soil improvement. She also gives a market for a large amount of roughage which would be of little value without her.

It is a noticeable fact that Iowa permits thousands of acres of corn stalks to go to waste, which would furnish thousands of tons of good silage for the dairy cow and for the steer also.

I wish to say in conclusion that I am pleased to be here. I trust that this magnificent show of dairy cattle is only the beginning of something greater and more useful to the state of Iowa. I bid you Godspeed in your new undertaking, and I hope you will live to see the day when Iowa will be recognized as the greatest dairy state in the Union. I thank you.

The President: I have an announcement to make. The Holstein-Friesian Association will meet in this auditorium tomorrow afternoon at 1:30. I would like to ask if Prof. Curtiss is in the house. He was supposed to arrive this afternoon. In his absence I will ask Mr. Julian to just say a word to us.

Mr. Julian: Our president is a man that I have a great deal of respect for and I consider his judgment good, but when he calls on me to take the place of Prof. Curtiss I have just made up my mind that I have been mistaken.

When I first came to Iowa there was very little thought of the dairy cow. There was no way we could fix it that we could get out a magnificent gathering like this. I remember even only so short a time as three years ago in a little talk I made Mr. Barney said that a few years ago I would not have dared talked that way against the dual-purpose idea. I want to say in regard to Mr. Barney. When he took up this work as president, the Iowa State Dairy Association was just a straggling association. The buttermakers had full control of it and a few were doing the best they could to create dairy sentiment in Iowa. There is a magnificent gathering of people here today and the grand speeches we have heard and the splendid cattle we have seen can't be duplicated in any other state in the union, and I am glad that Mr. Glover has stated that fact. There is no area of land that is as fertile and will produce the great crops that this fine state of Iowa will. I don't say this in a boasting manner. I have been all over the state and I say that there is less waste land in this state than in any other similar area on the face of the globe, and I look for the time when it will be one of the foremost states in the production of dairy products. We have seen upon these grounds one of the most magnificent exhibitions of dairy cattle in the United States, and I dare say that there is no state that will put up as fine a show as we have. It has been said in Hoard's Dairyman that Iowa was a dual-purpose state, but I want to say to Mr. Glover that Iowa is showing these fellows a few things and they are simply following. Nobody in Wisconsin thought of the cow test until Mr. Marsh suggested it, and a number of other men in Iowa became interested and they have gone on until they have produced wonderful results.

I want to say a few words about the growth of the dairy sentiment in Iowa. Last night it was my fortune to come down on the train with a number of men from Kossuth county. These men a few years ago didn't talk dairying. Last night we didn't talk anything else. Today these men have one of the best creameries in this state. A few years ago where the Fenton creamery is located now we held one of the first dairy meetings in the county, and we formed a permanent organization. At that meeting I was told by one of the men that propably not twenty men present had ever attended a farmers' institute before.

The people of Iowa have no good excuse for anything else but good cows. It is your own fault if you don't, for you can easily weigh and test your milk and find out. I thank you.

The President: The election of officers will be tomorrow morning. We will have another good session when the buttermakers will have the floor, and I hope a large number will be present.

Adjournment.

THURSDAY MORNING, 10:15.

The President: The first order of business this morning is the election of officers. This is the time for nominations, and I want to say a few words myself. About twenty-seven years ago I attended the first state dairy convention. It was at Algona. At that time there were a few cow men present, and only a few. Soon after that it sort of drifted into a——well, I don't know what, because I didn't attend until about seven or eight years ago. At that time I attended a convention at Cedar Rapids, and I have attended every convention since. I was elected vice-president, and it seemed rather peculiar that I should be elected an officer at the first meeting I had attended in sixteen or eighteen years, but that was the case. I was given to understand that I was supposed to sort of get the dairymen into the meetings. I set about to do that work as well as I knew how. I think there were about four men who owned cows at that Cedar Rapids meeting, and I was one of them. It looked as if I had a big job on my hands, but notwithstanding that I understood very well that if our association was made what it should be the cow men and the buttermakers and the kindred interests should be united. I had become acquainted with a young man a short time before and in some way we drifted together. Shortly after I had been made president I appointed him chairman of the Legislative Committee, and I want to say to you that whatever has been done for the good of the association he is entitled to as much credit as anybody else I know of in the association. There has been no time I have not felt perfectly free to call upon him to do anything and everything that seemed right and necessary for the welfare of the organization. I remember very well a year ago I was in Gladbrook. I picked up the Register and Leader and about the first thing I noticed was an item saying that the dairy bill had been put to sleep. I went to the telephone office and called up this young man and I asked him what he thought about it. I suggested that he call the different members of the Legislative Committee together and that we go to Des Moines. We concluded that was the thing to do. Now, during the fight down there over our bill possibly you don't all understand just what the conditions were. I will say this. We had to bring the bill into both houses on a minority report. It took a good deal of work to get it through under these conditions, and I have never attended a meeting in Des Moines when he wasn't on hand glad and willing to do everything he could to bring about the right result. Gentlemen, I have the pleasure of nominating for your next president, Mr. E. R. Shoemaker, of Waterloo.

Mr. Shoemaker was unanimously elected.

Mr. Shoemaker: Mr. Chairman and gentlemen of the convention, I don't know but that perhaps a little instance in connection with eastern club life will explain better than anything else I might say about my situation just now. The story as it runs is this. There was a member of a prominent New York club who was unfortunately affected with stammering speech. He had gone to one of the great specialists. In a short time he had so far recovered that he could say and repeat without hesitancy ''Peter Piper picked a peck of pickled peppers.'' When he returned to his club his friends gathered about him and were congratulating him upon his marvelous recovery, and after he had listened to their congratulations for some time he said: ''W-w-w-w-well, y-y-y-y-y-es, t-t-t-h-h-hat is t-t-true. I c-c-c-an s-s-s-say Peter Piper picked a peck of pickled peppers, but t-t-hat is a d-d-d-damned a-a-wkw-w-ward s-s-s-ent-tence to w-w-work i-i-nto an or-or-din-nary c-c-c-onversation.

Now, really that is about the way I feel. There are a good many things, my friends, that I would like to say and that I have in my heart to say, but I am not able to work it out right. I appreciate the honor you have bestowed upon me. I think it is an honor for any man to be a member of this association and to be its president. I want to assure you that I shall give to this organization during the year to come the best that is in me and that is all I can do. I ask and believe that I shall receive your hearty sympathy and co-operation, and if I have this we will be able to accomplish the greatest possible good. I thank you, my friends, more deeply than I can say, and I assure you that I am at your service.

The Chairman: The next in order is the nomination for vice-president.

Mr. Mortenson: It has always been customary that we have as vice-president a buttermaker, and we have in that office at present a buttermaker. He has given good satisfaction and if we look at him he apepars to have a good deal of energy in reserve for another year. Therefore, I will nominate Mr. F. W. Stephenson, of Lamont.

(The secretary was instructed to cast a unanimous ballot for Mr. Stephenson.)

Mr. Stephenson: Mr. Chairman and fellow members, a year ago when I was elected as vice-president of this association I promised you that I would do everything in my power for the good of the organization and the dairy interests of the state. If I know my heart this morning I am in position to renew that pledge at this time. I pledge you once more to labor in the best interests of dairying to the best of my ability. I thank you, friends, for the honor you have placed upon me, and I trust you will have no reason to regret what you have done. I thank you.

The Chairman: The next in order is the nomination for your secretary. Mr. Johnson has asked me to say to the members of this association that under no consideration will he allow his name to be placed before the convention.

Mr. Wentworth: It is recorded in the annals of history that when God's chosen people wanted a great leader they selected one from among their own tribe. When this association needs a man to follow in the footsteps of a Joshua, a Daniel or a Jesse let us select Jesse himself. I take pleasure in nominating J. J. Ross for the secretaryship.

(The secretary was instructed to cast a unanimous ballot for J. J. Ross, of Iowa Falls, as secretary.)

Mr. Ross: Mr. Chairman, ladies and gentlemen: I am certainly pleased to stand before you and accept this office of secretary. I can certainly say that I appreciate this very much, and in accepting this obligation I promise that I will do all in my power to make this association in the future what it has been in the past. I realize, and I think the new president especially realizes, that there is a great responsibility resting upon us. I think you will all agree that the executive officers can do but little without the liberal support of the membership of the association. I hope and believe that you will give the officers in the future the same hearty support that you have in the past.

In accepting this office it may be well to offer a few suggestions. When this association was first organized it was an organization of buttermakers. It was found necessary to add the dairy cow, because she is the foundation of all dairying, and we find in Iowa there are about 100,000,000 pounds of butter made annually in our creameries. There is also a large amount of butter made on our farms, and this year we have received several applications for entry cards for exhibiting dairy butter. It seems to me that it would be a good idea to include dairy butter and cheese in our exhibits. Why not have a dairy butter and cheese class in our competitive exhibits and offer premiums?

I again thank you for the honor you have bestowed upon me.

The Chairman: The next in order is nomination for treasurer.

Mr. Johnson: I have in mind a man I wish to present to you for treasurer—a man who has diligently labored for the interests of dairying and a man who has served you as treasurer. You all know him perhaps, but not so well as I. For years we have worked hand in hand, and he merits the return to office. I wish to place the name of F. L. Odell.

(The secretary was instructed to cast a unanimous ballot for Mr. Odell as treasurer.)

Mr. Barney: I believe this closes the election of officers, and I wish to congratulate you upon having selected a splendid corps of officers for the ensuing year. I want to take this opportunity to thank this association for what they have done for me.

Mr. Andrews: Just at this time when everybody is feeling good I want to say a word. I sat here and listened to the report of the secretary with a great deal of interest and I want to say ''Bully for Johnson'' for the splendid financial report. We have watched the growth of this association during the past three or four years and I want to say that there is not another organization in the state that is as well organized as the Iowa State Dairy Association. With all this growth goes responsibility and work. As I listened to the talk of the newly elected secretary here this morning he looked mighty good to me. He looks like a fellow who is capable of doing a lot of good hard work, and I wonder if the members of this association appreciate the amount of work that is connected with this office. I understand that the secretaries in the past have been given $150 a year for the work. We are going to expect a great deal more work in the future. The association is growing and it necessarily must be done, and it isn't fair to ask a man to give the time necessary to carry on this work for the amount we are now paying. I, therefore, move that we pay in the future $250 instead of $150 to the secretary.

(The motion was seconded by Mr. Zell and unanimously carried.)

Mr. Wentworth: It seems hardly right under the conditions to ask a man to work as hard and devote his time to the duties placed upon the treasurer of this association without pay. In our by-laws there is no salary attached to the office of treasurer, and it seems nothing more than right and just that some financial recognition be made for this time and work. I would suggest that in order to cover this expense we appropriate a sum of $50 from the funds now in the treasury to Mr. Odell.

(The motion was seconded by Mr. Johnson and unanimously carried.)

Mr. Barney: I believe there is nothing further so far as the election of officers is concerned. The buttermakers' session follows this election and I am going to turn the meeting over to Mr. Stephenson.

Mr. Wentworth: I would like to make one suggestion. This organization is growing very rapidly. We are confident in the opinion that it is going to grow more rapidly in the future. Suggestions have been made in the last few meetings as to the benefits that could be derived from broadening this association's scope, and I would suggest that it would be a proper matter to bring before the convention that a committee be appointed to revise the by-laws and report at the next convention.

Mr. Barney: I think that is a splendid suggestion.

Mr. Wentworth: I move that a committee be appointed to revise the by-laws after careful consideration and make such additions and changes as may be deemed necessary.

(Motion seconded by Prof. Mortensen and unanimously carried.)

Mr. Stephenson: I do not believe we have ever had an audience exactly like this. We have with us this morning in great numbers the farmers—the men who milk and care for the cows. We have with us the creamery manager; we have with us the buttermaker who manufactures the finished product; we have with us the commission man who buys that finished product in the market. It doesn't seem to me we have had a better chance to discuss this question as we have this morning. Now, I am not going to do a great deal of the talking myself. I have attended these conventions for eight or nine years, and I have never attended with any other object in view than to gather all the good ideas I could, then go home and apply them and make more money for the patrons of my creamery.

I am going to ask Mr. Fowler to give us his idea, this morning, in regard to composite testing of cream. Then I want you all to discuss this subject.

Mr. Fowler: Mr. Chairman, I did not know that I was going to be called upon here to express my opinion on any subject. But I will tell you what I think in regard to the testing of cream. This is done in different ways at different creameries. It is a recognized fact that the only true and correct way is to take a sample of each can and test it immediately upon delivery. But in different creameries, as I said, they do it different ways. I take a composite sample and I test every two weeks for the reason that I haven't time to test every can as delivered. This may be wrong, but I have tried it both ways. We have taken one patron and I have tested each can as delivered, as well as a composite sample which I tested every two weeks. At the end of this period I have compared results. So far I have failed to vary over two pounds of fat on any one man's cream for the month. This is very close, but you must remember that our cream is delivered by the idividual patron and in an individual can, and as a general thing every other day. It is poured into the weigh can, thoroughly stirred and the sample taken. That way I think I get a very good sample. In testing this cream I take the sample and heat it to about 120 to 125 degrees. I shake the bottle thoroughly during the heating process. I then weigh out my sample, add my acid and make the test. I test milk in the same way, first heating it, then cooling it back to 70 or 75 and have my acid at about the same temperature. I have my tester run smoothly so that there is no jar when it is up to speed. I first run it about ten minutes. This may not be necessary. I then fill the bottle up to just below the neck, run it about five minutes, add water and then run two minutes more. I read these tests while they are warm, say at about 120 degrees.

I don't know as I can add anything further.

Mr. Gudknecht: Wouldn't it be better to take the sample from the farmer's can? By mixing 25 and 15 per cent cream it seems the 15 per cent cream would get the advantage. I have taken it both ways and believe the can sample is the best.

Mr. Fowler: Forty per cent cream, if it is sweet, will usually turn from the can very closely. However, if you have a can of 40 per cent sour cream then it will adhere to the can and it requires a lot of rinse water. But the cream at my creamery will average about 24 per cent. I have some run as low as 16 per cent, but the average is about 24 per cent and I have no trouble in regard to the can turning clean. I believe sour, heavy cream will also adhere to the can.

Mr. Clark: I would like to ask Mr. Fowler in regard to the composite sample. Do you have any trouble, or how do you instruct the buttermakers to avoid the mould that will gather on composite samples? I find that a great many buttermakers have trouble with mould gathering on the composite sample, and I thought you may be able to instruct us how to keep away from it. Mould interferes with the testing.

Mr. Fowler: I have had little experience with mould on the top of composite samples, but for the last year I have been able to avoid it. I do it this way. In washing the jar it is necessary that the cover be washed very clean. There is where you get the mould. You will find by taking two jars, one new and the other old, one cover clean and the other not, you will find the one with the dirty cover will mould and the other will not. By washing the covers clean with a strong solution of lye and by keeping the jars clean we have had no trouble with mould.

Mr. Suhr: Mr. Fowler said he heats the samples to 120 degrees and then cools to 75. How do you cool the water?

Mr. Fowler: I don't suppose it is really necessary to cool the cream because the cream is weighed into the test bottle. But for milk it would be absolutely necessary to cool it because when you read you increase the volume and in order to get a correct sample you will have to cool it. However, I find I get the best results and a clearer reading by cooling the cream.

Member: I would like to ask if there is some means whereby these composite samples will not vary. In my territory we had to give it up. A good many patrons got wise and they would change the screw in the separator about every time they skimmed. We would get one delivery of 50 per cent weighing about 25 pounds. The next would test 30 and would weigh 40 or 50 pounds. They would give us a large amount of low-testing cream and a small amount of high testing cream, and on account of it we would have heavy losses. We found we had to test every can and get the exact test. If we could have taken the right size sample we could have overcome that.

Mr. Fowler: There is no question but what the proportionate sample is the only correct way.

Member: Can you keep track of every man's cream that way?

Mr. Fowler: A proportionate sample is taken by the weight—not by the amount of butterfat.

Mr. Payne: I would like to ask if we would not be far better off by testing every individual can instead of using the composite sample. I find several reasons why it is better. One reason is, as a general thing the farmer wants to know what his test is. If you test each individual can you can let him know. That helps us a great deal. I don't think it is the right way to instruct buttermakers to take composite samples. When you test every can you are working along the lines that the centralizers follow, and it is the only right way. Here is another thing in taking the sample. I find it easier to use a small graduate to take the sample to weigh instead of a pipette.

Mr. O'Neil: I would like to say that composite testing does not give the buttermaker a true check on his work from day to day. By testing every can every day he knows exactly just how much fat he has. Some take a drip sample, but cream is sweet and sour, thick and thin and the result is not accurate. Daily testing is better for the buttermaker, better for the creamery and better for the patron.

Mr. Fowler: I stated when I started out that the only proper method is to test every can, but conditions sometimes shape themselves so it is impossible for every buttermaker to do this, and I happen to be one of them.

Mr. Payne: How is a buttermaker to keep a daily record if he uses a composite test?

Mr. Stephenson: We have threshed out this question of testing cream quite thoroughly, now we come down to whole-milk. I presume you are or have been confronted with this problem. You have a patron whose test one month may be 3.6 and maybe next month 2.4. I remember the first time I tested at Lamont. I had eleven patrons that tested below 3.5. It was during the time that Mr. Kieffer was assistant dairy commissioner, and I called him up. I didn't care to assume all the responsibility of paying eleven patrons for a test that ran below 3.5. Mr. Kieffer made another test of the same samples. Every man that ran low with me ran low with him, and I have had a warm spot in my heart for Mr. Kieffer ever since. He said my test was correct. ''Pay these men exactly for what they test and remember I stand back of you,'' said Mr. Kieffer, and I did. He said to those patrons, ''You know why your test is low.'' They did know and the next time I tested they all came right up where they belonged and have been there, with the exception of one man, from that day to this and it has been six years. Now there is sometimes what we term ''monkeying'' with the test. I remember of talking with one man who operated a creamery himself for a number of years. He said there was no way of running a creamery successfully without you give and take. He meant that if you have a man who tests low and another high even them up. I don't agree with him. Gentlemen, I give my patrons to understand that if they test 6 per cent they get it and if they test 2 per cent they get it. Of course, the patrons are not always to blame. We as buttermakers must be careful in taking the composite samples and take proper care of them until the test is made. Be careful and accurate in your testing, then when you have made it stay by it. They will threaten you, but there is only one thing to do and that is to deal with your patrons on a fair and square basis and stick to it.

Prof. Mortenson: I believe Mr. Fowler is right in his statement that he can get an accurate composite test from his cream. One of the conditions is that the cream be thin. But I do not believe, however, it is the proper system for the creameries to adopt because we have in most places now hand separator cream that is rich and thin. If we are taking composite samples it is quite possible to have a variation as we can't get the same amount of sample from the rich cream as from the thin. Variations occur in that way. The greatest objection to the composite sample is that you are not getting your daily check. I believe that is important. I know of a certain creamery. They had between 14 and 16 per cent moisture; they had 2 per cent salt and they were apparently conducting their business in an ideal way, but at the end of the month they didn't have any overrun. Investigation showed that the loss was in testing. If this creamery had checked the business every night this loss would not have occurred because they would have found it right away. A great many large factories are putting in girls to do the testing and it doesn't cost a great deal. The ladies are going to be the creamery ladies. They are equal to any man so far as the testing is concerned. I believe the small creamery can afford to have a small store in front where they can sell cream, milk, buttermilk, ice cream, etc. The same girl that does the testing can run the store. I believe in girls for doing the testing. So far as variation is concerned in milk, you are bound to have them. I think Mr. Stephenson has told you why these occur. However, the milk from one cow may vary 2 per cent from one milking to another. Just why this occurs is not fully understood. Although these variations are possible, in nine cases out of ten the farmer is in position to give a good reason for it.

Mr. Stephenson: I am going to ask Mr. Kieffer to tell us how butter is received and in what condition in the New York market.

Mr. Kieffer: It certainly is a pleasure to me to be called on and for the opportunity of saying a word to you, as my heart is with this association. I do not know that I can tell you to your entire satisfaction why butter is graded in New York as it is or why it is handled on the grade as it is in the place of the score. Butter that will not grade as specials, but comes within the grade of extras has to be sold as extras, no matter if it grades very close to the special quotations. That is, butter sold openly on the exchange. We have had on the New York market up to the first of August and when you commenced to have this dry weather, what we term fancy butter. Everybody spoke about the big improvement. The dry weather came on in the west which lessened the product and possibly might have been the cause of a little neglect here and there. Anyway cream was brought to the creamery in a neglected condition, and we all know that the best butter can not be made out of cream that is not in good condition. Butter of this kind won't improve. It got a bad start on the farm and in no case will you find it improving after manufactured. In all cases you will find it working against the grade.

In regard to the incident that Mr. Stephenson mentioned, I took the stand I did because I had had experience along the same line. It is true that milk will vary from day to day, but I have never found milk that would test 4 to 4.2 drop down to 3.8 without something being wrong. When I went to work in this state we didn't test the milk. It was brought to the creamery and what we termed pooled. Each man received so much per hundred pounds. Finally the directors adopted the testing system, and I felt the same as Mr. Stephenson did. I took daily samples and at the end of the month made the test wholly realizing that there would be a great many who would condemn me and the system as well. In making that first test, somehow it ran better than I had expected because they had been telling stories about some of the patrons watering the milk. The second month there was one man's test that dropped to 2.8 from 4. I didn't feel justified in cutting that fellow because we had just inaugurated the system and I didn't want to create any talk against it, so took the generous view that there might be some mistake somewhere. There was no mistake in the testing, but I allowed the slip to go through. Instead of paying him for the 2 test I raised it to something like 3.4 or 3.5 to keep the business. We did. The next month I watched everything closely and knew then there was no mistake. This man's test was 2.8 and I sent in the report to the secretary as 2.8. The man appeared before the board and made a vigorous kick. Then the trouble started. I met him on the street and he went at me good and strong. I said to that man, "You know the cause of your low test. You know better than I do. I can't tell you, but you know." He could not explain why he could not get a 4 test and mentioned the 3.5 test the month before. I said, "Mr. Blank, I believe you know that I raised your test to 3.5 when you had a 2.8. I did and I made the mistake of my life." I left the fellow and he was good and warm. He threatened to get my job, etc. Shortly after I heard that the dairy commissioner had to appear in a little town to make a speech and on the way, accompanied by Mr. Leighton, he dropped in to Dyersville and examined our ceramery. I made the announcement to the milk haulers that the dairy commisioner was here. This was, of course, heralded in the country and it went to this man's place. He thought there was something doing. He immediately came to the creamery and said that he had found out the cause of the low test. "My hired man," he said, "after he milked and poured the milk into the can rinsed out the pail with water and emptied it into the milk."

Mr. Johnson: I have just two or three minutes to make an announcement. There are 176 entries of butter and it will be shown at the Kimball printing office right after dinner. At 6:30 tonight the butter will be sold at auction by F. M. Brown, the official auctioneer of this association, at the Ellis hotel. The only regret is that there is not a prize for each of you.

Adjournment.

THURSDAY AFTERNOON, 2:15.

The President: We have with us this afternoon Mr. A. O. Storvick, an inspector on the Minnesota Dairy and Food Commission, who will speak to us on "The Buttermaker as a Factor in Successful Creamery Operation."

THE BUTTERMAKER AS A FACTOR IN SUCCESSFUL CREAMERY OPERATION.

A. O. STORVICK.

Fellow Dairymen.—If you will bear with me a few moments this afternoon I will give you a few facts that I have observed in regards to the problems we are facing. I wish to congratulate you on the great success of your convention, and I am frank in admitting that it is way ahead of we Minnesota fellows in this respect, that you have the dairymen and creamerymen together. We have made two associations, but have been trying to get them together.

One of the requisite factors in operating a creamery is the buttermaker and in successful creamery operation he is the most important factor. The name buttermaker was applied to the man who made the butter, when the first attempt was made to gather the cream from a number of farms where the cream could be churned in large factory churns in order to secure a more uniform grade of butter to be placed upon the market. While the name buttermaker at that time perhaps was appropriate the buttermaker of today has outgrown this name and we ought to call him a creamery superintendent or some name having a broader meaning, as the creamery operators of today have many duties aside from simply making the butter.

We have different classes of buttermakers and you will pardon me if I censure or cast reflections on some of those following this profession as I am well aware of the fact that the buttermakers within the hearing of my voice are the boys who strive to learn more and more how to better serve the people in whose employ they are, and they are here for this purpose and expect to leave this convention with more knowledge and energy to help them in this important work.

Buttermaking has become a science and is a vocation that requires a great deal of study, and, in order to become a successful creamery operator it requires men who would make a success in any line of business. It takes a student and the brightest men we have in this country will find ample field for development if he wishes to become one of the leaders in the art of operating a creamery. It takes men of original ideas, men who are able to think for themselves, and men who possess energy and enthusiasm enough to carry out these thoughts.

It has been said that no man made a success a lasting success who did not give himself wholly into what he was called, and when one gives himself into his trade he gives not only his time but his mind also. It's no use trying to convert one's action until we have converted his thoughts.

His duties are many and so must his qualifications be in order that he may be able to do his work well and that his patrons may receive the greatest remuneration possible from this branch of farming, he must consider himself a partner in the business, he must take a live interest in the success of his creamery and in the welfare of his patrons individually as well as collectively.

He must be able to secure the confidence of his patrons and, unless he possess the tact of dealing with patrons it will be impossible for him to fill his position successfully. How can he expect their co-operation and good will unless they believe him honest and upright in all his dealings with them. Unless he has their confidence how can his pleadings for a better grade of milk or cream have any effect.

Too many of our buttermakers lack confidence in themselves. Too many are afraid of competition. They should remember without a battle there is no victory, and that it is the men who win in competition whose services are sought, and that these are the positions where the highest salaries are paid. Competition is no more than "survival of the fittest." Supposing that your competitor is using better methods than you are, how can you expect to win? Meet him with his own weapon unless it is dishonesty in which case he will sooner or later fight himself.

Supposing he is testing and paying for every can of cream received, meet him and go him one better if possible, for instance: In our work among the creameries we find, especially among the hand separator factories more or less unclean cream cans, they seem to be more difficult to clean than are the milk cans since the pasteurization of skim-milk is adopted. Now we believe an arrangement whereby these cans could be thoroughly cleansed every time they were emptied, would be greatly appreciated by the women on the farm, and also aid you in securing a better grade of cream at your creamery.

The quality of butter turned out by the buttermaker is his strongest advertisement, it is through the quality of butter made that most of the promotions come. It is through the quality of the butter made at our local creameries we owe our success in the dairy industry.

I have in mind a certain creamery where success did not smile on their first attempt, nor the second, it seemed as if this place should never have a successful creamery. Finally it was decided to make another attempt, this time only a few farmers were willing to join, they hired a young man and he commenced his work under the most discouraging conditions. Hardly any cream was delivered as the farmers did not think he could do any better than the men who preceded him, but he dit not give up hopes. After waiting all day at the creamery he stationed himself at the depot every evening when the farmers would bring in their cream to be shipped on the night train to the cities, pleading for their cream by saying: "Oh, let me have this cream, I will weigh and test it while you wait. I cannot make any great promises but we will do the best possible for you, and, if we can only get the cream I am sure we can make a success of our creamery. Not even a newspaper did this plucky young buttermaker have to help him, he used chalk and wrote on the sidewalks, "The Farmers Co-operative Creamery is in operation and would like to get all the cream possible." One by one he conquered, although he at times had to plead several times before he could depend upon their patronage, but he won out and during the past four years not a single can of cream has been shipped from this station. They are now a satisfied bunch of patrons, and I have been told by several of them that they were ashamed when they thought of how slow they were in helping their own creamery. This buttermaker is receiving a fine salary, and he is earning still more, his creamery is in fine condition not only on the inside but the outside as well; a nice driveway and lawn is kept in order; he not only takes an interest in his creamery but in his patrons as well. He is testing their cows and thereby assisting them in weeding out the unprofitable ones, encouraging better cows, better care and feeding, and it is remarkable to note what he has accomplished in a short time.

On the other hand we find buttermakers just the opposite, who make pleasure their business and simply long for their monthly salary check. It is a sad sight when we visit a creamery where we are greeted at the door by several broken butter tubs, hoops off, which might be saved would the buttermaker only spend a few minutes to save them. They have been paid for with the expectation that they should be used. Stepping into the engine room perhaps we find several frozen lubricators, discarded injectors, one or more steam pumps, yes we even find condemned boilers, simply through the carelessness of the buttermaker. Oh, brother buttermaker, this does not add to the success of your creamery, pride in one's-self should prevent this state of affairs. When a creamery has confidence enough in you to intrust you with the care of their property, let the responsibility rest on your shoulders, do the best you possibly can, let your creamery be evidence of your neatness, the buttermilk vat up in the garret your ideal of cleanliness, the smooth running machinery your pride.

The success of your creamery is resting mostly on you, and it is up to you to do your part faithful and well, your conscience should tell you your duty, study the conditions you are working under, in many ways can you make yourself useful to the people in whose employ you are, while you are doing seemingly small things around your creamery, repairing the machinery, applying a little paint perhaps if needed or in improving the looks of your creamery surroundings, you are unconsciousy becoming better fitted for your work, the appearance of your creamery and the butter you are turning out is your advertisement and sooner or later it will be the means of your promotion.

Never has there been such a demand for good butter-makers as there is at present. Can you recommend a good man for us, we want one who is able to make good and we are willing to pay the salary. It is not a question of salary anymore, it is how much you can earn. We never have any calls for cheap men. The world is full of the ordinary kind in all trades.

I am not aware of any vocation that offers more opportunities than is in store for the competent butter-maker; it is only recently the creameries have learned of the benefit derived by employing the most competent men.

New and up-to-date equipment is added every year and it is the butter-maker who is able to keep abreast with the times that will be in demand. If you are able through special efforts, to turn out a better grade of butter than formerly, your creamery will be ahead that much. If you succeed in reducing the running expenses of your creamery ever so little or, if you are able through a systematic record of your work in making a slight increase in the amount of butter from a given amount of butter-fat. These are items all of which have a direct bearing on the successful operation of your creamery.

The work of the butter-maker in the future will not be confined within the four walls of the creamery. He will, in addition to the creamery interest himself and his patrons in better dairying. He will assist his patrons in more economical milk production, encourage the testing of milk from the individual cows and thereby showing the patrons the difference in good and poor ones, and the profit which may be obtained if better care and more liberal feed is given. If the patrons can be interested in this way your creamery will soon show a marked increase in their business and you will be proving your services of great value to them.

It is encouraging indeed to note the success of the creameries through the efforts of the enterprising butter-maker, and the interest they take in this important industry. May it continue; may these sessions and the few hours we spend together inspire and encourage us to do our part well. Remember that each successful creamery is a mighty factor in building up the dairy industry not alone in their respective communities but of your great commonwealth.

The President: I am sorry that there were not more here to hear Mr. Storvick. I think his talk has been a splendid one, and it is along the lines that we have given a great deal of thought, and I am glad that he agrees with me in this fact, that the dairymen and buttermakers should stand together.

Prof. Mortensen was to have talked this afternoon, but I think we will wedge him in in the morning. The secretary of the Commercial Club has just informed me that there will be a smoker at the Waterloo Club tonight, to which everybody is invited.

Adjournment.

THURSDAY EVENING, 8:15.

The President: The first this evening will be a report from the resolutions committee.

Mr. Fowler: The committee on resolutions beg leave to report the following for your approval:

We, the Iowa State Dairy Association, in convention assembled, do hereby resolve:

First, We express our hearty appreciation to the city and press of Waterloo for the enthusiastic entertainment and advertisement they have given our association.

Second, We express our hearty apprecation to the exhibitors of dairy cattle and machinery at this meeting of our association and we heartily and highly appreciate the effort and energy of the American Guernsey Cattle Club, the American Jersey Cattle Club, the Holstein-Friesian Breeders' Association and the Ayrshire Breeders' Association in aiding us to make this meeting a success.

Third, We express our heart felt sympathy to H. R. Wright, the past dairy commissioner of this state, in his sore affliction and sickness, and we wish him a speedy recovery to health. We miss his activity, energy and association among us.

Fourth, We express our thanks and appreciation to W. B. Barney and the other officers of this association for their services as such officers and their energy and ability in managing this association for the past year.

On account of the great success of this show, resolved that it is the sense of this association that the cattle exhibit and the exhibit of the dairy implements and machinery be continued as a part of the annual meetings of this association. And we express the wish that the same be perpetuated in the future as one of the important factors of this exhibit and the meetings of this association.

Sixth, We congratulate the farmers and people of our great state upon the wonderful progress that dairying has made within our borders, and we assert with confidence that if there is anything that will make Iowa a greater state and our lands rise to still higher values and the people thereof enjoy greater prosperity and happiness it is the constant and continuous growth of dairying within our state. And we believe, that if continued, it will make Iowa the beauty and garden spot of the world.

We hereby express our high appreciation of the energy and ability of H. G. Van Pelt as manager of the cattle show and exhibit in connection with this meeting of our association and we appreciate his activities, judgment and energy in his management as state dairy expert, and we earnestly request the legislature of this state to continue their appropriations for the continuation and extension of this work, and we earnestly request each member of this association to use all honorable means to secure such appropriation.

(The resolutions were adopted as read.)

The President: We will now have an address by Mr. C. Hansen, of State Center, on "Hog Raising as a Profitable Creamery Side Line."

HOG RAISING AS A PROFITABLE CREAMERY SIDE LINE.

C. HANSEN, STATE CENTER, IOWA.

Mr. President and Ladies and Gentlemen: I notice by the program that C. Hansen was to deliver this talk. I will give him the credit for the success our creamery has enjoyed in this side line as he was manager for eleven years, and as he is my father he succeeded in pounding the business into me so I am taking it up where he left off.

I wish to state that this talk is not for the purpose of boasting as to what we have done in the way of raising hogs in connection with the creamery, but to show what can be done in this side line.

Many creameries are at the present time disposing of their buttermilk for a small amount of money, some as low as $25.00 a year, while others are getting upwards of $200 to $300 a year. Possibly there are creameries represented here that are making a greater profit from this source than we are, but I believe, with all the advantages of hog raising in connection with the creamery, it is the best method for disposing of buttermilk. Not only does it pay the stockholder a good dividend, but if the system is properly conducted, it is one of the grandest successes toward holding a co-operative creamery together and making a success of all co-operative creameries.

We have studied the subject until now we make each little detail in our system have a meaning. The State Center Creamery is co-operative, owned by the farmers around our little city. We have 265 stockholders at $10.00 per share, and about 100 patrons that are not stockholders. A record is kept of the net inches (I say inches, as we are on the old oil test) sold by each stockholder and at the end of the year the per cent of hog dividends are based on number of inches sold by each. The non-stockholder patron does not share in these dividends. The reason for this is to make it an object for each patron to become a stockholder. When a man has $10.00 invested in a creamery, he feels he is a part of that business and boosts for its success. These dividends are paid at the annual meeting in February, and as all know that is the day that their checks will be ready for them, it has a great tendency towards drawing them to the meeting, thus making our annual meeting a success. Last year we paid a 75 per cent dividend from our hogs amounting to $1,856. When these checks were handed to the stockholders one could not help noticing the interest taken. Those receiving checks amounting to $15.00 to $30.00 would carry them around to show to their neighbors, while those only getting from $2.00 to $5.00 would fold them and place in their pockets with a vow that next year they would get a larger one. At the same time men who were not stockholders were busy looking up the secretary to invest their $10.00 in a share.

We have handled hogs for 19 years in connection with our work, but I am not going to tell you that every one of those 19 years was a success. The first few years were an experiment and part of the time the business held its own, while other years money was lost on this line. The experience of each manager was a help for the new manager, and now it has come to the time when we claim successful hog raising in connection with the creamery is a science, and only after careful study have we been able to accomplish the results I will relate to you. I will only go back to the last five years, ending December 31, 1909. During those five years we handled 1,875 hogs and lost 18 from different causes. Cash in this fund amounted to $32,826.90; paid for corn, $4,164.09. We paid dividends amounting to $7,208.08, or an average of $1,441.61 a year profit from our buttermilk.

Now, do not forget the fact that to do this amount of hog business requires a large amount of butter-milk and during this time we made 1,599,015 lbs. of butter, so you can see we had the buttermilk to work with. Up to October 10, this year, we have handled 316 hogs and now have 78 on hand and $1,650 in hog funds. With good luck the next three months we will pay close to $2,000 in hog dividends this year.

The first step toward successful hog raising is the hog yards. Some think all that is necessary is to fence off a portion of the ground and turn in a few hogs and that settles it. The first thing you want to do is study your ground. Lay out your yards carefully, arrange your pens so the hogs can be sorted without running each one down. Place your buttermilk cistern in position where each pen can be reached with plenty of troughs and have these troughs large enough to cause as little commotion as possible among the hogs while feeding and each hog can take all the time he requires to get his fill. The hog house should be located facing the south, with plenty of windows. Plenty of shade trees should be arranged at convenient places for summer time, and a good, large platform for feeding corn. Do not throw the corn on the ground for the hogs to pick up out of the dirt. A hog will put up with all kinds of dirt, but if he is handled on a sanitary basis he will thrive far better than under filthy conditions.

Second, the way to success is in buying, feeding and selling hogs. Experience has taught us not to raise pigs. While this can be done, it is a slow way of turning your money. Buy young hogs weighing not less than 130 lbs. up to 160 lbs as, if smaller than this, their bones are not matured, and buttermilk, while a good fattener, does not make good bone food, and when you try to fatten a small hog he will break down in the legs when weighing about 225 lbs. A young hog properly fed will gain 2 lbs. per day. In the summer time, when possible, get hold of old lean sows just after the pigs habe been taken from them, and you will find these will gain an average of 3 lbs. per day. With 75 to 100 hogs gaining at that rate while pork is worth 8 cents per pound, you make a pretty fair profit, provided the market does not drop. In feeding, we find required the greatest amount of study to obtain the best results. Our method is to feed at regular hours. In the morning we give them all the buttermilk they can drink and then what would be about three ears of corn each.

In the middle of the forenoon we again fill them with milk, the same at noon and in the middle of the afternoon. At night we repeat the morning rations. Keep enough hogs on hand to use all your buttermilk so you will have no old, sour milk in your cistern. Th cistern should be emptied once a week and given a good scrubbing at least twice during the summer months. This does away with all the mould and any germs that may gather on the sides of the cistern.

Probably we have some advantages in buying and selling hogs that some creameries would not have. When we have a bunch ready for the market and the price is satisfactory, we inform our local stock buyer of how many we have, and ask him to furnish us with an equal number of light hogs. He is always anxious to get heavy hogs and we do not have to hunt around to keep enough light ones on hand.

If there is any question in regard to this side line any of you gentlemen wish to ask, I will be glad to answer same to the best of my ability.

Mr. Fowler: I would like to ask Mr. Hansen what it costs to produce a ton of pork.

Mr. Hansen: We aim to put on to a young hog about two pounds a day. It eats about six ears of corn at 45c a bushel. We have never sold any buttermilk, but I presume a pound of pork produced the way we feed costs us not over 3c at the most. That includes everything.

Mr. Ross: I would like to ask Mr. Hansen about his cistern. Is it made all of cement?

Mr. Hansen: Our cistern is wood. It is sunk in the ground about 200 feet from the creamery. It is on sloping ground and runs from the churn room into the cistern. We have two cisterns. One large one and one small one. When the large one is full it overflows into the small one, and whenever there is buttermilk in the small one the patrons are entitled to use it.

Mr. Fowler: How much buttermilk do your hogs consume a day?

Mr. Hansen: From four to six gallons in the summer. In the winter they don't drink so much. It weighs about eight pounds to the gallon. We feed five times a day and give them all they will drink.

Mr. Fowler: Do you believe these same hogs on clover would make cheaper gain with less corn?

Mr. Hansen: I do. We have one of our lots of about two acres that we sow in rye every fall. In the spring when it is about three inches tall we turn them into it.

Mr. Fowler: I sold 131 yesterday that made pork for 3½c, not counting the clover anything, and figuring corn at 56c.

The President: This is a very interesting subject and I would like to give you more time to discuss it, but as the meeting was started late we are short of time and must hurry. I have asked Dean Curtiss, of the Iowa State College, to give us a short talk, and after that Prof. Van Pelt will follow with his cow demonstration.

ADDRESS.

C. F. Curtiss, Ames, Iowa.

Ladies and Gentlemen: It has been my privilege and pleasure to attend a good many dairy conventions in Iowa, and also in Waterloo, but I want to say to you that this convention has been a sort of a dream, or, rather, it is what we have been dreaming about. I can remember the time when we could not get out a corporal's guard of dairymen—men who milk the cows—to a convention. They would tell us there was nothing of particular interest to them, but on this occasion you have set a new standard. You have incorporated with this convention a show of dairy stock, and I want to say that we have been making dairy history at this gathering. I believe it has done more to advance dairying than any other dozen conventions. I want to congratulate your officers and the management of this show, as well as the citizens of Waterloo, upon the magnificent success.

The state of Iowa was for a good many years regarded as being rather primitive in the dairy business. It was said that we were in dairying as a side issue, which was true to an extent, but a new life has been coming into the dairy business of the state. Our farmers have been getting into it as a real business, and they have been making progress such as has never been made before and such as has been made in but few states, and I believe that the dairy possibilities are as a matter of fact just opening up.

A few weeks ago I was over in Wisconsin, and I was interested in the splendid display of dairy stock there, and some of the good people pointed with pride to the fact that there were more Guernsey cows in in Wisconsin than are fed today in the Island of Guernsey, and I presume that is true, and it is certainly a magnificent record for a state like Wisconsin. I glory with these people in the showing they have made in the development of this and other breeds of dairy cattle, and I hope that the time will come when we will have in Iowa more Guernsey cows than they have in the Guernsey Islands, more Jerseys than in the Jersey Islands and more Holsteins than in Holland. Then when we have all of these we will have room for ten times as many. We hear a good deal said about the rural depopulation and about the people who have been leaving our state, but it must also be said to the credit of the people who are on the farms of Iowa that they are producing more today than ever before, and they are learning to do it because of the improved methods which they are applying to agriculture, especially in this line. We have prided ourselves too long in the fact that America has been, as we term it, the granary of the world. Let us rather strive to become the food producing section of the world, and let us seek to produce products that will take less from our soil and that will retain the most in the way of fertility and future usefulness. These are the lines along which we must develop the agriculture of Iowa in the years to come. We are confronted today with new conditions. We are confronted with conditions that require skill and intelligence. A good many have been frightened out by high priced land. They have imagined that when land reached $100 or $150 or $200 per acre that it was too valuable to grow grass and raise live stock. I want to say there is no greater mistake than that. As our lands advance we cannot afford to abondon our live stock and our dairy cows. We can not afford to do anything else than to engage in an occupation that will leave the soil enriched and develop the skill of our people.

There is no occasion for being alarmed at high-priced land in Iowa. A good many who have sold their land and gone to regions where they could buy cheaper farms—who have sold land worth $100 and bought more worth $10 and sometimes less, have left land that has advanced 25 to 50 per cent while that they bought advanced 10 per cent. I believe there is no better investment in Iowa than the good rich, productive soil we have in this state. I believe there is no way in which a man can invest his surplus earnings better than the improvement of our farms, better than the building of homes. The farm as a home has not yet come to its full appreciation in America, and the thing we need today as a people is to develop our resources and to develop the love of the soil and the love of the home.

It is rather discouraging when we see a farmer who has spent the better part of his life on a farm leaving the old place that has given him a good living and a good profit and moving to town or to some small village, perhaps to spend the remaining days of his life. If he would spend the money he puts into his town home in the improvement of that farm he would have a more comfortable home and in all cases he would extend the days of his life. It is wrong for a man who has lived an active life on a farm to retire and absolutely do nothing. It is the hardest thing he can do. When a man has nothing to do he shortens the days of his life. I believe we are coming to a time, in fact we are at that period now, when we are going to look upon the farm as a permanent home for our children who follow us.

As I came in this morning, someone pointed out to me a very superior looking cow and said: "What is the value of that cow?" I said no man knows what the value is of a cow like that. It is impossible to estimate the value of a superior animal such as a great many you have here, and it is also impossible to estimate the value of an acre of Iowa land. Whenever we develop a better system of agriculture, a better kind of a dairy type, we are developing a higher grade of intelligence. The dairy cow always comes in to serve the man who is farming high-priced land and who is farming by what we term intensified methods because she is an economical producer and because the increasing population in our cities must be fed from the products of the farm. There has been an enormous increase in the past dozen years in the amount of butter consumed in America, and there has been a corresponding increase in the price. The buttermakers are entitled to great credit for the progress they have made in taking the raw material from the farms and manufacturing it into the finished product.

I was very greatly pleased at the address of Mr. Hansen in regard to this one side issue because a good many of the creameries pay no attention to the by-products. I know a good many who have been turning their butter milk into the sewers. He has shown you that in five years they have produced $7,000 profit. What he has said applies to perhaps nearly every creamery in the state and it applies to the farmers' by-products on the farm.

I believe we are coming to a new era in dairying in the United States and especially in the middle west. People are taking to dairying as a permanent business. They are taking to it as a means of successful agriculture. Such a show as this couldn't have been brought together anywhere in this western country 10 years ago. No one can calculate what it is going to mean to the farmers and the creamery patrons to have the improved dairy blood introduced into the communities which support the creameries. A man who gets an improved animal and takes it home to his farm becomes interested in it. He becomes interested in improving the product and the output of his herd, and whenever he does that he is contributing not only to the success of the creamery, but to the community as well. As we develop along this line our creameries are going to develop, and their product will command better prices.

During the past few years at Ames we have had an unprecedented call for men to engage in educational work There is a new system of education coming about in our public schools and agriculture is coming into the system. The demand is overwhelming for men. We have not been able to supply the demand for the reason that the farm opportunities appeals to the young man today who has taken a college course. It appeals to him more strongly than ever before. You can't blame a young man who has an opportunity to go into practical farm work for taking to that in preference to going into a salaried position. The thing we need today more than anything else for the improvement of Iowa agriculture is a greater love for the land and for the home in the country.

Another fallacy in connection with our system of farming is the tendency to put the pastures under the plow and to increase the acreage under cultivation. I believe the time is near at hand when we are going to be obliged to turn the other way and to increase the acreage in order to keep more dairy cows and to make the acres we have under the plow more productive. All over this state most of the land could be doubled in productive capacity if we had that intensified system of cultivation and conserving of fertility which they have in foreign countries where they have developed the dairy industry to the highest state of perfection. These magnificent breeds came from regions where land is worth from $500 to $1,000 per acre. They are high priced simply because of the kind of live stock used in their system of agriculture. In the development of American agriculture as we increase the output of our farms and as we increase the returns coming from an acre of land we are going to be obliged to adopt these methods of live stock raising and a more intensified system of cultivation. Sometimes we look forward to the time in Iowa when we are going to have the small farms, but I am free to say that I do not know whether that is going to materialize or not. During the five years between 1900 and 1905 the farms of Iowa decreased from 223,000 to 209,000, indicating that there was a tendency to decrease the number of farms and increase the size. This has been made possible by reason of improved machinery. America has led in the improvement of farm machinery, and by reason of this it has been possible in a good many cases for men to buy their neighbor's farms when their farms were for sale and operate the increased acreage successfully. There is that tendency in American agriculture and at the same time there is the tendency to take from our land by a system of agriculture that puts nothing back, but no man can continue to market the raw material rather than the finished product without paying the penalty sooner or later.

The importance of the work that this association is doing in Iowa can not be over estimated for the reason that it is encouraging the system of agriculture that will leave a heritage to future generations. If we don't do this we are going to lose ground and we are going to drift back just as a great many of these old regions have done. We have been so busy making money that we have overlooked some of these important problems that go to make country life more attractive. If we do not improve and develop greater social and religious advantages in the country we will fail in the end. I thank you.

The Chairman: I am sure you have all enjoyed this splendid address. The next is something you all want to hear and see. It is something that has attracted wide attention and is well worth your trip to the convention. Prof. Hugh G. Van Pelt, the Iowa Dairy Expert, will now give us his famous cow demonstration. He needs no introduction.

COW DEMONSTRATION LECTURE.

PROF. HUGH G. VAN PELT, WATERLOO, IOWA.

Ladies and Gentlemen.—I am pleased with the honor of speaking to you this evening and I am glad of the opportunity of demonstrating the essential points to be observed in selecting dairy cows, using as an example Bosiana Ann. This Jersey cow, owned by C. I. Hudson, of East Norwich, L. I., has not only won first prize and championship honors at every state fair and dairy show wherever she has contested but I am informed by her owner that this year she has produced over 104 pounds of butter in a single month. In accomplishing these results she has demonstrated that show yard points and great production are compatible.

Here in Iowa, like in other states, we need just such cows as this. We need their sons and their grandsons sired by equally typical bulls to increase the annual production of the cows so generally being milked on the farm. The improvement will not come as a result of milking more cows but will follow the milking of better cows cared for with more improved methods.

That great improvement is necessary is illustrated by the fact that in this state where we are milking 1,500,000 cows we have thousands that are producing 300 pounds of butter in a year, hundreds that are yielding 400 pounds, scores of them that are producing 500 pounds, dozens of them 600 pounds and many individual cows that are producing from 600 to over 1,000 pounds. In view of this and the fact that the average is only 140 pounds you can readily see that there are a tremendous number of cows producing less than 140 pounds of butter annually.

This really is the situation and I want to say to you that I believe it occurs in your district as well as in others, unless you are advanced in dairying to a point where you make a study of the individual cow.

There are good cows and poor cows all over this country. Which are the good cows and which are the poor cows is a problem that must be solved. In our state we are making strenuous efforts to determine the good cows and eliminate the poor ones.

In my experience I have never seen a herd but that some cows in it were profitable and some were unprofitable, simply eating up a portion of the profits that the good cows were making. In testing associations which we have organized in Iowa we find many peculiar instances. Often times in one and the same herd will be found two cows standing side by side, one of which when her record has been kept for a year will have produced 100 pounds of butter, while the other kept under identically the same conditions, being fed by the same feeder, milked by the same milker, given the same foods in amounts and quality will have produced according to the scales and Babcock test 400 pounds of butter during the same period of time.

Let us take for granted that it costs $29 a year to feed the first cow and that her butter sells for 30 cents a pound, yielding a gross income for her owner of $30. Figure the net profit and it is not difficult to ascertain that this cow has made for her owner $1 net profit, after allowing the skim-milk, calf and fertilizing ingredients of the offal to pay for the labor expended upon her. In other words, the dairyman or farmer has contented himself with milking a cow over 700 times for a net profit of $1.

We, as farmers and dairymen, are prone to complain about the drudgery on the dairy farm and about the scarcity and high price of farm labor. Still the proprietor of a farm, one of the greatest factories of the United States, is willing to sit under a cow night and morning over 700 times a year and milk her for the meager profit of $1.

Considering her stable companion, however, that has made 400 pounds of butter which when sold at 30 cents per pound will return $120, she may be fed $60 worth of feed and still return a net profit of $60 for her owner. It means that this cow, making 60 times as much profit as the other cow is worth at least a whole herd, numbering 60, of the less productive type.

This is the condition that faces the American farmer and dairyman today and he, and he alone, can by intelligent methods so select and care for his cows as to make them all return him a large percentage of profit.

On the other hand we realize that your farms are your farms and your cows are your cows, and you are at liberty to do as you like. You can milk one cow for a year and make a net profit of $60 or you can milk 60 cows for the same period of time in order to make the same amount of profit. In other words, you can milk one cow one year to make a profit of $60 or you can milk the same kind of an old cow 60 years in order to make the same $60 of profit.

However, we know the American farmer well enough to be certain that he will not knowingly milk a whole herd of cows to make the profit which one cow should make, and those who are willing to take time to weigh and test each individual cow's milk to determine which cow is which can readily sort out and retain only the profitable cows for their future herds.

As farmers we should realize that in reality the farmer is a manufacturer. Our farms are the greatest manufacturing plants in the world and every animal that we have on them, no matter what else it may be, is a machine placed there for the purpose of manufacturing finished products out of the raw materials, the grains and grasses grown in the fields. And I say to you that the farmers of the United States will never reach their highest plain of dignity until they realize their positions in commercialism as manufacturers.

It is a well known fact that greater percentages of profit can be made from raw materials by using efficient machines, those that are durable and capacious, than machines that are out of date and wasteful. When we will accept the highest type of present day machines for the manufacture of milk and butter-fat and then give them the proper care and treatment which is due them we will have solved the problem of great and economic production. We will thereby gain in both quantity and quality of production and by so doing will have demonstrated that our farms are the greatest factories on earth.

You say to me if we all had good cows there would be no market for the butter. However, I am confident in our lives we will never see the time when there will not be a demand for all the good butter that can be produced.

Thirty-five years ago there were being milked in the United States 11,000,000 cows. Today there are 22,000,000. During this thirty-five years our population has doubled and in the next thirty-five years we can expect our population to double again. In case it does, one of two things will be necessary if the people of this country are to use dairy products to the same extent per capita as they are now. It will be necessary either to milk twice the number of cows or to double the average production. Milking twice as many cows, or 44,000,000, would add greatly to the drudgery, for it will take more labor and they will consume much more feed. All things considered the best solution is to milk the same number of cows and by the use of better methods in caring for our herds by selecting and retaining one or more profitable individuals and by the use of good sires in building up these herds.

It will not be a difficult matter to induce your cows to yield double their present amount of butter-fat. After that has been done there will still be the possibility of doubling the production again.

If you could realize the wonderful possibilities on the farm today for those who will solve just this kind of problem you would be surprised at the wonderful results that can be accomplished.

I believe that one-third of the 22 million cows being milked in the United States are not any more than paying for their feed, another third are being milked at an absolute loss, which means that all of the profit that is being made from dairying is derived from one-third of the cows while the remaining cows that are now being milked are eating up a portion of the profits that this small percentage of individuals are making.

Were we to allow ten minutes for milking and feeding each of the unprofitable cows that are now being milked in the United States 700 times a year, then divide this time up among the farmers in the United States, we would find that on the average farm some man wastes annually 27.2 ten hour days each year. This is practically a month and represents the farmer's vacation, which he does not get. He has chosen to milk during his vacation period while the business man goes abroad. These are merely facts and all the man who milks cows needs to do to prove them is to join a testing association or begin regularly to weigh and test the milk of his cows. The only reason we are milking unprofitable cows today is because we have not realized the value of the milk scales and Babcock test, or, in other words, we have not made a study of the individual cow.

In fact, there are many most excellent lessons that are to be learned about cows, their selection, their feed, care, etc., that can be learned only from the cows themselves, and, as much as I appreciate those lessons which I have learned out of dairy papers, books and in school, the greatest lessons I have ever learned have been taught me by the cow herself.

In addition to the use of the Babcock test and scales there are many points to be considered in selecting and judging dairy cattle and, using this cow as an illustration, I will try and make plain the essential points to be observed in selecting dairy cows. If during my talk there are any questions you would wish to ask I will be glad to answer them for you.

There are five essential points that must be present in the make-up of any cow if she be highly productive, and the absence of any one of these points is proof that the cow is either not productive or that she will not remain productive over a long period of time. These points may be enumerated as constitution, capacity, nervous temperament or disposition to work, blood circulation and the ability to convert feed nutrients into milk and butter-fat. Considering these, one at a time, it is always well to begin at the head.

Constitution is indicated, first by large nostrils. Nothing purifies the blood except oxygen and no oxygen ever reaches the lungs and comes in contact with the blood except through the air which the animal breathes. If the nostrils are small the amount of air is limited or the cow must breathe twice as rapidly as if her nostrils were larger. The respiration of cows is practically the same. Therefore, cows with small nostrils do not take into their lungs the same great amount of fresh air and oxygen that cows with larger nostrils do. Passing back it is desirable that the cow be deep from the top of the shoulder to the floor of the chest, well sprung in the front ribs and deep in the heart girth. A cow that is shallow in the chest and heart girth and slab sided in the front ribs is considered lacking in constitution. It should be remembered that the dairy cow is an extremely hard worked animal. A cow that will produce in one year 18,000 pounds or even 10,000 pounds of milk has accomplished more in providing food for mankind than three or four steers working the same length of time would have done. Because of the fact that she works as persistently as she does and that she is stabled six or eight months out of each year in a barn which is too often cold, dark, damp and poorly ventilated, where she is subjected to disease germs of tuberculosis, cow pneumonia, garget, contagious abortion and other diseases, it is absolutely necessary that all indications of rugged constitution be well developed.

In Iowa and in other states where I have traveled it is very seldom that more than one or two very small windows are to be seen even in great, magnificent farm barns that have been built at great expense. It should be realized that whenever barns are built and boarded up tight without windows or fresh air ducts the light, sunshine and fresh air, which cost nothing and are absolutely essential to maintain the cow's health and make it possible for her to do her best work, are shut out.

The next point for consideration is capacity. Beginning again at the head, you will notice on this cow the extremely large mouth. Any animal with a large mouth is a good feeder. I have never seen an animal with a small mouth that was a good feeder. Just as truly as it is necessary for a cow to consume large amounts of food in order to prove herself profitable it is necessary that her mouth be well distended and large. Passing back, the body should be long from the shoulders to the hip bone. The ribs should be well sprung and deep giving dimensions for a large capacity or storage room, namely, length, breadth and depth.

Size of barrel is an indication of the amount of food that the cow can consume at one time, but with this consideration should also be considered the degree of thoroughness with which the cow digests and assimilates her food. Any portion of the food which passes off undigested is wasted, and worse than wasted because it taxes the cow's digestive apparatus without producing any gain. The strength and power of a cow's digestive apparatus is indicated to a large degree by the character of the hide and hair.

You have all noticed in the show rings the judge lift up the hide and hair with his hand. It is impossible for him to look into the cow and determine the character of her digestive system, but he can turn his face away and by the touch or handling qualities of the hide and hair there is conveyed to him by his sense of touch as indicated by the hide and hair the condition of the inner and vital organs of the cow. In other words, the hide and hair is an outward continuation of the inner organs of the beast. If the hide is hard and stiff or the hair wiry and harsh then there is something wrong either temporarily or permanently with the cow's digestive apparatus. If the cow's hide is soft and pliable, covered with hair that is oily, soft and silky then the indication is that her digestive organs and her circulation are in good active condition and that she will not only consume large amounts of food at one time but she will digest it readily and thoroughly and soon be ready for another feed. It is more desirable that a cow have a large body, yet a small barrel, covered with hide and hair of the proper texture and handling qualities, than a large barrel covered with a hide and hair of inferior quality.

The two points, constitution and capacity, are both essential.

The third point is the question of whether the cow is a worker or a loafer. If you have been watching this cow you have noticed that she has been working every minute since she has been up here on the stage. Whenever a cow chews her cud she is working and the persistency with which the cow eats and chews her cud is a good indication of her nervous temperament.

Another important indication is the size and character of the eye. The cow's face should be broad between the eyes, well dished and her eyes should be prominent, bright, placid and alert. The animal with dull, sluggish eyes set back in the head is as a rule a loafer, standing under the shade of a tree fighting flies in the summer time while her sisters are grazing back and forth across the pastures gathering food for the economical and profitable production of milk and butterfat.

A further indication of the proper nervous temperament is the prominent and open jointedness of the back bone. You will notice as I pass my hand along this cow's back each of the spinal vertebrae stand out prominently with absolutely no covering of beef or fat. This is an indication that every pound of food this cow has consumed, outside of what has been necessary for her own maintenance, has been converted into milk and butterfat. Were this a beef animal, right and ready for market, you would find stored up and evenly distributed along her back from 2½ to 4 inches of fat or beef. Every pound of food consumed by the cow that is manufactured into beef is lost and wasted from the dairyman's standpoint. For this reason the animal which converts its food into beef and stores it on its back regardless of what breed it belongs to is a loafer from the standpoint of butter production. The same is true relative to other regions of the animal and you will notice the absolute freedom from beefiness throughout this cow's entire contour.

The fourth essential point to be considered in selecting dairy cows is the blood circulation. To be of the productive type the cow must not only have an abundant flow of blood but the course of circulation must be through the proper channels and in the right direction. Herein lies the great difference between beef and dairy bred animals. If you will study the workings of these two classes of machines you will find that up to the point where the food has been masticated the process of consumption and digestion are practically the same. After the food has been digested in the case of the beef animal the blood is pumped out from the heart along the digestive apparatus, the digested nutrients picked up or assimilated and carried by the blood upward and deposited over the shoulder and chine or back, the ribs, the loins, over the hips and rump and into the hind quarters. The flow of blood is thus directed carrying all nutrients because for hundreds of years beef cattle have been bred by intelligent breeders for the specific purpose of consuming a large amount of food, digesting, assimilating and depositing it over these regions of the body because years ago the packer informed the breeder of beef cattle that the ultimatum of all his efforts was the block and if he desired to secure from 6 to 8 cents a pound for his steers instead of from 3 to 4 cents a pound then it was necessary to breed animals the offspring of which would utilize their food in developing the high priced cuts, namely, the porter house steaks and rib roasts which the consuming public were willing to pay for. The success with which the breeder of beef cattle has met is demonstrated at our state fairs and fat stock shows by a careful observation of the cattle exhibited.

On the other hand when the real dairy cow has digested her food the blood is pumped out from the heart past the digestive apparatus, picking up the digested nutrients and carrying them not up on top of their backs but around through the udder where milk and butterfat are made. The first indication of the amount of blood passing into the udder is often at the escutcheon, a portion just above the rear of the udder where the hair grows upward on each side of which the hair grows downward. It is believed that the hair covering the escutcheon is nourished by the blood in the vessels which are passing to the udder. An indication which determines more accurately, I believe, the amount of blood passing through the udder is found in the mammary veins. All cows have two of these veins, one on each side of the abdomen. Some cows have straight short veins ending in a small milk well. Other cows have veins that are large and tortuous extending far forward, as do the veins of this cow, to a large milk well, an opening in the abdomen large enough to insert my thumb, and passing on to a second milk well and some times on to a third or fourth. These are termed double extension veins. Some cows have three veins, one extending forward from the udder along the center of abdomen between the two outside veins. Such a vein is termed a center extension. The size, length and tortuousness of these veins together with the number and size of milk wells when found passing forward from the udder of the cow indicates the amount of blood that is circulated past the digestive apparatus picking up food nutrients, carrying them to the udder and being rid of its load is on the way back to the heart and lungs for purification and to be pumped back again. I have never seen a good cow with small short straight mammary veins and I have never seen a cow with large tortuous veins and large numerous milk wells that was a poor cow. A consideration of the blood flow will determine largely the character of a cow from the standpoint of milk and butterfat production. Food deposited on the back of the cow can not be made into milk and on the other hand feed that is deposited by the blood in the udder of the cow can not be manufactured into beef and for this reason a dairy bred animal is considered from the standpoint of beef production as a scrub and likewise a beef bred animal from the standpoint of milk and butterfat production is a scrub. This is due to the fact that no animal can do two things with the same pound of food at the same time. In selecting animals whose ancestors have for hundreds of generations been bred for the purpose of putting their food on top of their backs and striving to induce these animals to turn the circulation of their blood around to the under line of the body instead of the top line is working against nature and is quite as impossible as to produce high class rib roasts and porterhouse steaks on the backs of dairy bred cows.

The fifth essential is the ability the cow has to manufacture the digested food nutrients that have been brought to the udder by the blood, into milk and butterfat. Experience has demonstrated that certain types of udders have proven most efficient for this purpose.

The udder should be long, broad and of good texture. To gain length the udder must be attached high behind and extended far forward. You will notice on this cow that if a plumb bob were dropped from her hip downward the line would fall just in front of her udder. If it were dropped from the pin bone it would fall just behind the udder. Thus it is that good length from hip bones to pin bones is desired for it is an indication of the length of udder development. Furthermore it is desired that the tail head carry straight out. Cows that droop at the rump because of the law of correlation have tilted udders, or udders with a portion of the fore quarters sacrificed. On the other hand, cows that carry out straight at the tail head carry straight forward in udder development, adding to the size and capacity of front udder development.

As we turn this cow around you will notice that she is thin in the thighs, in fact, I measure the thigh with my thumb and finger, and she cuts up high behind. This conformation is necessary in order to have a wide udder and is the formation described by the term thighs outcurving and in-curving. An udder that is long and broad with each quarter well rounded out and a teat on each corner meets with the specifications relative to form.

However, many of you, perhaps, have owned cows with such udders that were disappointments. The reason likely was because the udder had no texture or quality. This cow not only has a large well developed shapely udder but you will notice the presence of much quality and freedom from coarseness and beefiness as indicated by the texture, pliability and elasticity of the covering. You will notice the blood vessels which indicate that branches from the large arteries are carrying the blood into the parts of the udder.

These are the five points and if you are milking a cow any one of which are absent, you are not milking a cow, but only a part of a cow. For instance, supposing a cow is capable of eating a large amount of feed, but lacks constitution; she will not remain healthy, and perhaps in a short time she will die. Granting her constitution without the proper nervous temperament or disposition to work, she will consume just enough food to take care of herself. And if she lacks capacity she can not eat enough feed to make a profit regardless of her disposition to do so. Given constitution, capacity and disposition to work, if her blood flows in the wrong direction she will make beef instead of milk and then it will be necessary to kill her to get the cost of the feed back. And further than this, if the blood carries the nutrients into the udder which has not the ability of extracting and manufacturing the nutrients into butter-fat, still there is a loss. All of these points fit together in dovetail fashion and must be given due consideration in selecting cows for profit.

There are other points such as width across the hips, breed, type and characteristics, but time does not permit reference to more than those points which are necessary for profitable milk and butter-fat production.

But, after all, when we have taken into consideration these points we do not know much about the cow. There is no one in the audience who can look at this cow and tell within 1,000, 2,000 or 3,000 pounds how much milk she gave last year. If you could not see that she was a Jersey you could not tell within one or two per cent of how much her milk tested were you to see a sample of it. The only way to determine the true measure of the cow is to use a scale each time the cow is milked and test her milk one or two days out of each month. It does not take long to do this and it is the only method of determining accurately the real merits of the cow from the dairyman's standpoint, and it is well worth while. Study the history of every great cow and you will find that at some time in her life she or some of her offspring were sacrificed because her real value had not at that time been determined.

Remember that in the United States farmers are milking fourteen million cows, no one of which makes anybody a profit and that on the average farm in this country somebody is wasting 27.2 days every year.

By a combination of judgment and determining the development of the essential points for butter production and the use of the scales and test this great waste of feed and labor can be eliminated.

I thank you for your kind attention.

Adjournment.

FRIDAY MORNING, 10:15.

Mr. Stephenson: You will please come to order. The first number on our program this morning is an address by Prof. M. Mortensen of Ames on "Creamery Construction."

CREAMERY CONSTRUCTION.

PROF. M. MORTENSEN, AMES, IOWA.

As our convention is held at Waterloo it is appropriate to remind you that we have a creamery close to Waterloo that has the distinction of being the first creamery in the United States in which a cream separator was operated. This pioneer creamery was operated by Jeppe Slifsgaard and his son Truel, and is known as the Fredsville creamery.

As the cream separator had just been invented, Jeppe Slifsgaard when he came to this country from Denmark in July, 1882 brought one with him. This separator was kept at the custom house in New York for two months, as the officers in charge were unable to decide as to whether this peculiar machine was constructed from steel or from iron. They finally decided that it was constructed from steel and fixed the duty at $93.

For introducing the cream separator the United States the name Slifsgaard will long be remembered by the dairymen of our country.

If we, today, will make a comparison between the creamery in which the first cream separator was operated and our modern country creamery, we will not find the improvement which we should expect. The machinery has been improved, we must admit that the manufacturers have kept pace with the times, but the building which is put up as a shelter over this expensive machinery is often much inferior. We have too many frame structures erected for creamery buildings. Too much money is therefore lost on account of fire.

When a creamery is erected in the prominent dairy countries of Europe the question is not asked, what is the cost, it is what kind of a creamery shall we build and what kind of equipment shall we install in order that we may be enabled to do the most efficient work at the lowest cost. We, in this country, are so apt to ask what will it cost without considering what we will receive in return. Looking over the report of the Swedish Co-operative Creameries for the year 1907, we find that in one district in which they have 51 creameries the average cost amounted to $4,260. If we consider that labor and material in that country are considerably cheaper than here, we can safely estimate that a creamery building similar to those built in Denmark and Sweden if erected in this country would cost close to $5,000 or $6,000.

These are large brick buildings constructed principally with the view of efficiency and sanitation and when the building has been constructed and the machinery installed, then they consider the outside appearances.

They make a beautiful lawn in front of the creamery and often plant small groves back of the creamery. It is their object to build an establishment which will look cheerful to the butter maker and his helpers and inviting to the farmer who patronizes it. Every man in town as well as every farmer in the community takes greater pride in their creamery than in any other commercial establishment in their town. Their creamery is an establishment which they have not only built merely for themselves, but for their children and grand children as well.

I was impressed with the remarks that W. W. Marsh once made in reference to the European custom of building farm houses which would stand for centuries. I am not able to show you such old creameries, as the creameries were not constructed until recently, but I have seen many homes in Europe which have been built for over 100 years, and the modern European creameries of today are built substantially enough so they, with proper care, should remain in good condition for a century.

Gentlemen, this is the system we eventually are coming to in this country, not only in constructing our farm houses, but in constructing our creameries as well. If we had started to erect suitable, substantial and fire-proof buildings and equipped them as a creamery should be equipped, it is questionable that we would have had the failures among the co-operative creameries as we have had in the past. Would not farmers have taken too much pride in that institution to abandon it by selling their cream elsewhere?

We have recently had many creamery fires in our state. Some of the creameries will be rebuilt, while others will not. We have started to write each unfortunate creamery secretary and are offering our assistance, if we in anyway can be of assistance to him. We at the same time urge upon them the advisability of replacing the old building with a fireproof, structure and we find that after a fire the word fireproof sounds better to them than at any other time. In this work our Boosters Club can do a great deal of good. We should make a strong effort in the way of encouraging the farmers to rebuild in case of fire loss, providing that the locality has a sufficient number of cows so it will warrant the operation of a creamery.

It is with a great deal of satisfaction that we, during the past year, have added a few practically fire proof buildings to our list of co-operative creameries. One of these is the co-operative creamery at Germania, Iowa. This creamery is built from hollow cement blocks size 8 in. by 8 in. by 16 in. These blocks were bought at Albert Lea, Minn., and cost 18 cents each laid down at Germania. The floor is of cement and the chimney is made from concrete reinforced. For reinforcement they used about 600 feet of 1 inch pipe which they had on hand. The chimney extends into the ground four feet. The base is four and one-half feet square and they used one part cement for four parts of sand. The partitions in the building are all made from cement block. The size of the building is 30 by 60 feet and 11 feet high, and has a shingle roof.

The cost of this creamery is as follows:

Four lots	$350.00
Cement blocks	540.00
Lumber	647.00
Seven hundred fifty sacks cement	256.50
Lime, brick and tile	129.50
Hardware, including ventilators	222.40
Labor, common, 25c per hour; labor, masons, 60c per hour	725.00
Cost of well, 103 ft. deep with five-foot caseing	154.50
One 20-horse power boiler, one refrigerator, two 600 gallon ripeners	1,100.00
Value of machinery taken from old building	475.10
Total	$4,600.00

Mr. Dyer, the secretary of the Germania creamery, made the remark that they have a creamery that will stand until the cows come home. We judge Mr. Dyer does not consider that the cow of today has any home, and perhaps he is right.

We are blaming the poor cow, but why are so many cows poor producers? The cow is not to blame, but its keeper, because he is not making a home for it, and a good dairy cow needs a home as well as does a good workman. If the cow feels that she has to run her horns into he keeper in order to get even, then we cannot expect to get the best results.

It is proper for us to build our creamery so it will stand until the cows come home, and the Iowa cow is soon coming home.

Fenton has another new creamery built from cement blocks. This building has a nearly flat roof constructed from lumber and rubberoid. The inside partitions are of brick and the floor of cement.

Contract price of this building	$2,650.00
Refrigerator	125.00
Ice house	350.00
	$3,125.00

By adding the cost of machinery, this creamery will cost very near $5,000. This beautiful plant is taking the place of the old frame structure.

The creamery at Newell, Iowa, burned to the ground recently. A new, up-to-date cement block structure has taken its place. The cost of this building with machinery, amounts to between $4,500 and $5,000.

In planning a creamery there are many factors to consider, but the main points to call attention to at the present time are convenience and sanitation.

Mistakes frequently made in constructing the floor plan of a creamery are (1) allowing too small space so it is too crowded, (2) allowing too much room, which results in more space to keep clean and too inconvenient to work in, and (3) the space of the creamery may be all right, yet the arrangement of the machinery is such that the vacant floor space can not be utilized.

The vacant floor spaces should always be at places where the spaces are needed. · The main work floor should be centrally located. The machinery should be placed so that the cream will run in a nearly straight line from the time it is received until it enters the refrigerator as finished butter. Lifting of heavy cans should as nearly as possible, be eliminated.

So far as sanitation is concerned, the old plank floors should be abandoned with the frame building. The floors should be constructed from cement and the walls should be plastered with a cement plaster. This can be steamed and scrubbed. It should frequently be whitewashed. By using more whitewash in the creamery we will keep it more sanitary. No creamery should at any time be without a barrel of lime. It will be proper to reserve a small space in the creamery where we, if considering it advisable, could install an ice cream equipment. I am mentioning this merely as a suggestion, but looking at it from a creameryman's point of view, the ice cream business is one of the greatest factors in bringing success to our local creamery. By selling ice cream you are converting butter-fat that is worth to you about 30c in butter-fat which sells at 60c per pound and the important problem today is to sell our products in the form in which they will net us the greatest return.

It is also up to our local creameries to create a demand for ice cream in the country as well as in the town. The country people are just as fond of ice cream as the city people. During one month this summer we sold ice cream from the wagon which collected cream for the college creamery and from these sales we cleared from 80c to $1 per trip. We also sold cheese from the same wagon and from these sales cleared from 30c to $1 per day. Although such sales may seem small to some of you, yet they mean considerable in reducing the hauling expenses of cream, which, today, is one of the big objects in conducting a creamery successfully.

Gentlemen, let us all unite in working for the erection of good fire-proof and more modern creamery buildings. I would suggest that the dairy papers run a creamery building and equipment department, and that they be in touch with every creamery constructing a new creamery and that they give a full description of the plant and give an itemized account of the cost of its construction. Information of this kind would be of much value and interest to all interested in the creamery business. I thank you.

FRIDAY AFTERNOON, 2:15.

The President: Mr. Quarton has a resolution for your approval.

Mr. Quarton: Mr. President: Some of the members of this association think that we ought to do something towards strengthening our interests in Washington. You all know that we are having a battle with those who manufacture a cheap substitute for butter. They are fighting the dairy and butter manufacturing interests, and at most farmers' institutes a resolution to support the action of our members in congress and our senators, and I think a similar resolution should go out from this body. I have prepared the following resolution and move its adoption:

Resolved, That we highly commend the course of our Senators and Representatives at Washington in opposing the efforts of the oleomargarine interests to repeal the present law regulating the sale of butter substitutes, and that we urge them to continue to support such legislation as may be proposed to still further draw a color distinction between oleomargarine and butter.

(Resolution adopted by unanimous vote.)

And now, Mr. President and Mr. Secretary, as an appointee of a committee, I have a little business to transact with you. The members of this association felt that they wanted to express to each of you their appreciation of your past services and their hearty good will. They have appointed me to present to each of you a little reminder or a little present from them. They have given me two $20 gold pieces and it is with much pleasure that I present them to you.

Mr. Barney: Mr. Chairman and members: I can hardly find words to express my gratitude for this token. I have been the president of this association for the past four years and I assure you the incumbency has been a pleasure to me. You all have my sincere thanks for this token and it is greatly appreciated.

The Chairman: We have with us a gentleman whom you all know by reputation at least, the man who has been at the front in the oleomargarine fight. E. K. Slater, secretary of the National Dairy Union.

OLEOMARGARINE.

E. K. SLATER, WASHINGTON, D. C.

Ladies, Gentlemen and Fellow Creamerymen: Mr. Barney said you all knew me by reputation, but I'm not exactly satisfied unless I know what that reputation is—good or bad. Perhaps he wanted to be strictly neutral. Anyway he told you I had been at the front in the oleomargarine fight, which is the all important object of my efforts these days.

I am going to be brief with you for when you leave I want you to leave feeling good. I came here as a guest of your association and as a native-born Iowan to talk to you on the oleomargarine question—a question which is of vital importance to you. In coming to you I represent the National Dairy Union, which is an organization founded in 1902 for the express purpose of looking after oleomargarine legislation at Washington.

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One of the fundamental principles of all pure food legislation is that of insuring to the purchaser that he shall get exactly what he pays for. In order to accomplish this, nearly all of the states that have enacted pure food legislation have prohibited the sale of oleomargarine, which resembles butter in color. This is absolutely necessary in order that the consumer can distinguish between the two articles. The authorities in these states have learned that in no other way can this be accomplished.

Acting upon this same theory the Congress of the United States in 1902 enacted the present oleomargarine law, which imposes a Federal internal revenue tax of 10c per pound on artificially colored oleomargarine and one-fourth of one cent per pound on the uncolored product. The purpose of this law is to make the production of yellow oleomargarine unprofitable, so that the product will be placed upon the market in its natural color.

The ingenuity of the oleomargarine manufacturers, however, has enabled them to circumvent this law by securing a yellow color in selecting the ingredients of their product and not by using artificial coloring matter. They are thus enabled to produce oleomargarine that looks like butter at a tax of but one-fourth cent per pound. Hence, the issue must again be met by Congress and new means devised for eliminating fraud.

A great effort has been made by the manufacturers of oleomargarine and their political allies to repeal the present law and substitute an original package scheme bearing an internal revenue stamp. At the last session of Congress several bills were introduced repealing the present law and substituting this scheme. Every bill introduced, which is favorable to the oleomargarine interests, propose to allow the sale of yellow oleomargarine. To this the friends of pure butter and pure food in general, object because it is impossible to prevent fraud in the sale of the substitute when the consumer can't easily distinguish it from the genuine.

Of course they provide for original packages and particular forms of labels, but their supporters know as well as anyone that a label law never can prevent fraud in the sale of the article as long as it is colored to look like butter. They are willing to agree to any kind of a label law and any kind of inspection just so long as they are permitted to color their stuff yellow.

Time forbids a detailed explanation as to the inadequacy of such regulation, but the following points should be kept in mind:

First, It would not affect the sale of oleomargarine in hotels, restaurants and boarding houses, where millions of our people eat butter. It is argued that the state laws should regulate this trade. If the state food laws are not inadequate why was it necessary to enact a Federal pure food law?

Second, and one of still greater importance, the internal revenue department is a tax collecting department and can not be made a police department in enforcing laws against fraud, except when the fraud is committed against the government by avoiding the payment of specified tax. This department can not become interested in the question of fraud when oleomargarine is sold to the consumer as butter. The internal revenue department is but a branch of the treasury department, except in collecting revenues for the United States treasury.

In case a uniform tax of 2 cents per pound were imposed upon all kinds of oleomargarine, the commissioner of internal revenue would only be interested in seeing that every pound of oleomargarine made was taxed at that rate and the tax paid to the government. It is argued that a heavy penalty for selling the stuff from any other package would prevent the irresponsible dealer, or peddler, removing the stamp and selling it as butter. But of what benefit is a heavy penalty if there is no machinery by which violators are to be convicted?

Third if, the law cannot prevent the hotel man from removing the stamp and selling the product to his patrons as butter, how can it prevent the peddler, who goes from house to house, from doing the same thing?

Fourth, a majority of our state law-making bodies, and those of foreign countries, undertake to prevent fraud in the sale of oleomargarine by drawing the color line. When the states fail it is because the administrative departments are not powerful enough to enfore the law vigorously, and because the Federal law is not similar.

The original package scheme is absolutely impractical, so long as oleomargarine is made to look like butter.

Yellow is the trade mark of butter. All butter is yellow during certain seasons of the year, while that from certain breeds of cows is yellow the year round. The maker of butter uses a very small quantity of vegetable coloring material to secure a uniform shade of color the year round. It is still butter after being artificially colored and is not colored so as to be sold for something else. When oleomargarine is colored yellow, it is not for uniformity, but to cause the substitute to look like something it is not. The natural color of oleomargarine is white or nearly so. Butter was yellow before oleomargarine was invented. Yellow is the natural color of butter. The cow had been developed by man until she produces milk at all seasons of the year instead of during only the summer season. Before being domesticated she gave only sufficient milk to support her offspring a few weeks in the spring and the butter oil in her milk was yellow. Yellow is the natural color of butter oil, and only man's development of the cow has made it necessary to introduce artificial coloring matter in order to give butter its natural color the year round.

The oleomargarine people have persistently endeavored to emphasize that they are representing the consumers of the country in an attempt to secure a "pure, wholesome and nutritious" food product at a reasonable price, and that the tax of 10c per pound on colored oleomargarine makes oleomargarine cost the consumer just that much more than it should cost. They are, however, so magnanimous that they do not object to a tax of 2c per pound on all oleomargarine.

In addition to claiming that they are sponsors for the consumers of the country, they contend that the dairymen are actuated only by selfish motives in attempting to retain the 10c tax. In other words, they are not satisfied with the present high prices for butter, but wish to create such a monopoly as will allow them to persecute the consumers of butter, a large number of whom would use oleomargarine if that 10c tax were only removed. Of course they know better, but such claims suit their purpose well. They advance them for the purpose of diverting attention from their real motives.

They know, as all informed people know, that the retail price of colored oleomargarine is not regulated by the cost of production or by the market demand for the product, but *by the retail price of butter.* This is true whether it is sold as oleomargarine or as butter. It is sold for two or three cents less than butter, whether the latter retails at 30c or 40c per pound. Under existing conditions yellow oleomargarine, which is taxed only one-fourth cent per pound, is sold for a very few cents less than butter, while white oleomargarine produced at the same cost, is sold for 10c to 12c less than butter.

How is the consumer going to be benefitted by the removal of the 10c tax? What benefit does he derive when the inevitable result is an increase in the price of oleomargarine just as soon as it is colored? Even if the element of fraud did not enter in, how is the consumer to be benefitted by a condition which results in increasing the price of the substitute for which he is clamoring (?).

When even the most conspicuous and innocent appearing claims of these people are analyzed, there is but one conclusion to which the intelligent person can come, i. e., that the only motive behind their efforts is an ulterior one. They want to make the task of committing fraud an easier one. Instead of working in the interests of the consumer, they are striving to create a condition of affairs whereby he can be humbugged and defrauded with even more ease than at present.

And what of the claim that the dairymen are selfish? They are only seeking to prevent unlawful competition, or rather substitution. They want a free field for the sale of butter on its own merits. They are not seeking to sell it for something else, and never have. They are only striving to prevent fraud. They demand protection for their industry from fraud. Is it selfish to do this? If it is, then the man who resists the burglar who breaks into his home for the purpose of illegal gain, is selfish and is worthy of condemnation.

And who are the best friends of the consumers of the country, the men who seek to substitute or the men who seek to create market conditions where the genuine product shall be protected and the substitute article sold for just what it is and at a price regulated by its cost of production and market demand? In thus protecting the genuine product, the consumers of both butter and oleomargarine are protected.

The dairymen can well claim to be working in the consumers' interest. This is their whole effort. In securing the elimination of fraud in the sale of butter substitutes, they are but incidentally accomplishing their own protection.

And what of the claim that they are attempting to still further boost the price of butter? Whether butter reaches a higher price will, of course, depend upon the supply and demand. In a market where both butter and oleomargarine were sold for what they are, if the consumers create such a demand for butter that the price is increased, no one is to blame but the consumers. They can at any time relieve the situation by buying oleomargarine at oleomargarine prices. An increase in the price of the colored substitute certainly wouldn't help him any, and yellow oleomargarine, whether artificially colored or made yellow by selection of the ingredients, always sells at a higher price than the uncolored.

No sane person can be misled by the claim that oleomargarine is as "pure, wholesome and nutritious as butter," providing he gives thought to the question. It is the same old story of the producer of the substitute claiming the superiority of his article over the genuine.

For several years the writer was compelled to listen for hours at a time to the claims of the manufacturers of artificial food products, that in using their particular articles the consumer was not only getting better quality, but was also saving money. They were always protesting against regulations which were intended to prevent fraud in the sale of those products. They termed such regulations "outrageous and undemocratic," and accused the legislative body of the state of discriminating against "pure, wholesome and nutritious" food products. In spite of all such protests, our state law-making bodies and our federal law-making body, have continued to strengthen such regulations and make the line of demarcation between the genuine and the imitation as complete as possible.

Congressman J. M. Nelson, of Wisconsin, clearly emphasized the foolishness of the claim of the oleomargarine people when he said: "It is well to remember that Congress cannot repeal or set aside the fundamental facts of nature or of human nature. Can Congress by law make an artificially painted flower equal to Nature's blushing rose? Can Congress by law make water flow up hill? Can Congress by law turn hungry wolves loose in sheep folds and reasonably expect that they will not destroy the sheep? Can Congress by law make beasts of prey ply their natural instincts by daylight, rather than by darkness? If Congress can do these unreasonable things, if it can defy natural law and common sense, doubtless than it has also the power to make good by law the assertion that oleomargarine, a heterogeneous compound, mechanically mixed in a machine, the child of greed, sold for gain, is the peer of butter as a food, the product of nature prepared in the living organism of the cow—man's best friend, from the beginning of his earthly pilgrimage as a race, the prototype of the kindliest gift of God to man—our mother."

In conclusion, I want to congratulate the Iowa State Dairy Association upon this excellent show and convention, and upon your initiative in bringing the cow into your meetings and making her so prominent. Certainly in an association composed of both buttermakers and dairymen, you are following out the right idea of co-mingling for co-operation and of practical demonstrations. I thank you.

FRIDAY EVENING, 8:15.

The President: The first speaker of the evening will be W. W. Marsh, of Waterloo. I know of no way I can introduce him that will be more appropriate than to say that he is the owner of the Dairy Maid of Pinehurst.

ADDRESS.

W. W. MARSH, WATERLOO, IOWA.

Mr. President, Ladies and Gentlemen: I remember a few years ago of reading of a man in Chicago by the name of Dick Wells. There was a race horse of that name, and on the strength of what the horse did this man broke into politics. One night when he was making a speech some fellow in the gallery learned who he was. He said, this man is named after a horse. Mr. Barney introduced me as the owner of Dairymaid of Pinehurst. I don't know, at this period in our development in Iowa, but what I would like to be known as a man who had done what he could to point out the vast difference between a mighty modern machine for turning the roughage into a very valuable food product, and I thank my friend Barney for introducing me as the man who owns the greatest cow in the last Iowa contest. He has been kind to me several times in his introductions and I have learned to like him.

I have been asked how it was that Barney and Shoemaker and I—with evidently rival interests, one a breeder of only Holsteins, the other Jerseys and the other Guernseys, get along so well. I say in answer to that, it is because we are all satisfied with what we have. Barney feeds

Holsteins for a specific purpose, and that purpose is to get a great quantity of milk. Shoemaker breeds Jerseys because he likes rich milk. I breed Guernseys because I want a great quantity of rich milk. So we all get just what we want.

If you will pardon me for a moment, I believe I will call the attention of the members of this association to a fact that I think very few of you remember, and that is, I believe I am the oldest active member of this association. It is a great many years ago that I attended the first meeting of this association at Cedar Rapids—the first meeting of this association which has been so potent for good in Iowa. I remember hearing a discussion at that time and it is opportune now because it shows what an advancement has been made in the commercial part of this great industry. I remember one old gentleman getting up and talking about the number of cubic inches of cream which it took to make a pound of butter. He knew that was the exact number. When he sat down another fellow got up and disputed it. He said so many cubic inches of cream will not make a pound of butter. Ladies and gentlemen, do you realize that in my life time we can go back to the place where people of this great state of Iowa did not know what constituted cream, and do you know that some of the legislators of our neighboring states passed a law specifying a certain number of cubic inches of cream for making a pound of butter?

From that true beginning this manufacturing and commercial side of this industry has been developed until today it is the real side, and instead of the men from livery stables and from off the street we have the men from our dairy schools in this state and our neighboring states of Wisconsin and Minnesota, and I can see before me many a man who knows he never saw the same colored butter put upon the tables or the same flavored butter twice in succession. Today we have a uniform color and a uniform flavor—all because of the advancement of this science.

While this has been going on, while we have changed the crocks, the pans and the cream separator by way of the deep setting pans; while we now measure accurately by means of bacteriology, the thermometer, etc.; while we now churn the salt and work our butter before we take it from the churn—all these modern improvements, strange as it may seem, the very foundation of the industry has been neglected and the dairy cow today, in my judgment, is a poorer cow than she was when we didn't know that cream contained butter-fat. I want to say that we have builded a magnificent superstructure, but we never looked at the foundation. The great dairy belief that Barney, Van Pelt and Shoemaker have fathered and pushed has for its basis one thing, and that is the knowledge of every cow in every herd in Iowa. You may think it not worth while or a necessity. Over in the coliseum, if you will take the trouble to look, you will find a grade Jersey—not a pure bred cow —that made 600 pounds of butter-fat in a year under official test, while the average cow in Iowa is not making over 150 pounds. Four hundred and fifty pounds of butterfat that grade Jersey has made more than the average Iowa cow. I just want to show you what it would mean if the cows of Iowa all could be made as good as that one grade cow which Vorhees took care of during the test, and that we are indebted to the American Jersey Cattle Club for sending to us as an object lesson. If you will take 450 pounds of butter-fat—the difference between what this grade Jersey produced over the average production of the Iowa cow, and multiply that by 30c you will have $135, the excessive amount that this cow has made over the average cow, and there are in this state today 1,500,000 cows. Multiply this by $135 and you will have the sum of over two hundred and a half million dollars that these cows, if they could be brought up to average the grade Jersey, would yield annually. Is it worthy of your attention as progressive people?

I sat on the platform the other night with Mr. Porter and I heard him discuss the taxes that are levied in this state. Substantially less than $4,000,000 we are taking in taxes to support our state government, and we dwell on $100,000 or $200,000 that one administration requires more or less than the other, but if you will consider, friends, for one moment that we are spending less than $4,000,000 annually, and that the cow, if we could average the Iowa cows up to this grade Jersey, the earnings from that increase would pay the taxes of the state for 50 years. Is it worthy of your attention?

Let me say that if the cows in Iowa could be averaged up to this cow Dairymaid the excess earnings over the present average cow would amount to $300,000,000, an amount that would pay the national debt every three years. Is it worthy of your attention? Is it worthy—is the work that Barney, Van Pelt and Shoemaker have devoted their services to, when these appalling figures of waste are shown you? It may not be so.

Then take the first three grade Jersey cows of this year's Iowa contest. What do you have? Substantially this; that the cows of Iowa, if as good as the average of these three grade Jerseys, would earn you $165,000,000 more than they are earning today. Is it worthy of your attention? I think so.

Now how are we to go about it to have these cows equal to the cows that have gone through this test? I want to say there is just one way to do it. We are indebted to Professor Babcock for a small machine that will permit us to know, if we use it correctly, the work of every cow every day in the year. The bread winners can be put where they belong and cared for, and those that are not can be turned aside. If we weigh and test the milk there wont be any trouble in locating the loafers. We come up against this one thing. We find men who say, "Oh, I know my cows without that trouble." I want to say, wise people, that you don't know. I know that you don't know, and I am going to tell you something to show you that you don't know.

Over in Wisconsin a man by the name of Gillett owns the greatest cow in the world. She made 998 pounds of fat in one year. Before Colantha 4th's Johanna was tested, before her milk was weighed and the Babcock test used, he sold a calf for one-twentieth of what it was sold for after the test was made.

I had the pleasure of talking to the students of the University of Nebraska last winter, and it occurred to me while talking that the greatest cow of the Jersey breed in production capacity was bred in the state of Nebraska—Jacoba Irene. She made 960 pounds of fat in a year, and that cow was sold from a herd to a man who was looking for great cows, for $125. I said to those boys: "Boys, when they write the history of Nebraska they wont write it comprehensively about your peerless leader. They wont say they possessed the greatest cow of the Jersey breed and that they let her go because they didn't know."

I want to speak of the Guernsey breed. Last year I read of a cow called Missy of the Glen that made over 100 pounds of fat in a month. When, in the 10th month of her period she had made 100 pounds I said, there is the bull I want in my herd. I got on the train and went to Rhode Island where this great cow is owned, and I looked her over and I believed everything they said. I investigated her ancestors; I inquired of the herdsman about the calf. He said, "We sent it over to the other farm." I didn't want to go there, so I thought I would inquire. "Do you suppose I could buy that calf?" He said, "No, I don't think you could." "Why not," I asked. "To be honest with you," he said, "we didn't know how great a cow she was and we sold it to the butcher." I found that this calf, for which I stood ready to pay $1,000, was sold for $8 to a butcher.

When you tell me, gentlemen, that you are wise people and that you know without testing, I want to say in all kindness that you don't.

There are in this audience tonight the men who operate the creameries of this state; men who buy the cream. I ask you, gentlemen, won't you step over the line and help Barney and Van Pelt and Shoemaker to do this mighty work for the state we love? Wont you help them make this cause worthy of the pastures and the fields and the meadows that God has given us? This is a great work. These men are tirelessly striving for the great purpose, and it is worthy of your attention. You come in daily contact with these men who produce the milk and you can do a great work.

I remember well a friend of mine who drove the first trotter that ever covered a mile in 2:30. I have heard Governor Stanford say that his great sire never sired a colt that could not go a mile in 2:30. We can do the same thing in Iowa with our cows. It will only take a short time, if we realize the importance of it, to take these cows, the product of the dual purpose sire, and send them where they belong and put in their places Holsteins, Jerseys and Guernseys that will not only double but treble our product over what it is today. I want to say, and it is a serious thing to say, that the agricultural press of Iowa had a great work and a mighty issue. It was to raise the standard of agriculture in Iowa. They capitalized their issue. They did not sell stock, but they sold advertising space to put dual purpose sired and milking short horns at the head of our herds, and they have done more harm than any mining stock ever did in the United States. They capitalized their issue at the expense of the people of Iowa.

I want to say to you that we have an agricultural press—a dairy agricultural press, Kimball's Dairy Farmer and Hoard's Dairyman, and you dairymen owe it to yourselves and to Iowa to spread the gospel through these papers.

There is another side so much more important than the one I have presented to you. It is the great moral question. I want to call your attention to one thing. Have you ever ridden through a fertile prairie that has been made desolate? I want to say it contains a lesson that is different than the one I have talked about. It is a moral question. Does the waste Iowa has had matter to our children and our children's children? I want to call your attention to the British Agricultural Association. It sounded a warning. It asked the government of the United States and of Canada to pass laws compelling the agriculturists of these countries to put back into the soil all the vegetable nutrition they took from it. I want to read you what P. Duncan Kennedy of Kansas, said in his great lecture on "A Master of Commerce." He said:

"In order to drive home to the reader the validity of the statement we are about to make, let us examine the pay roll of the years. The Chili saltpetre beds yielded, in 1860, 68,500 tons; in 1870, 182,000 tons; in 1880, 225,000 tons; in 1890, 1,025,000 tons; in 1900, 1,453,000 tons; and since 1900 every year has added 50,000 tons to the demand of the year before. The amount yielded in 1900, 1,453,000 tons, was sold for about $27,000,000, one-quarter of it passing into the thousands of nitrogen compounds used in our civilization, and the other three-quarters into food through its fertilizing action in agriculture.

"European agriculture is thus wholly dependent upon a tiny little strip of land in South America for its commercial fertilizers, and were the little republic of Chili to close her gates of export, hunger would follow as infallibly as the night the day. This is, of course, embarrassing, and highly significant of the interpending conditions of our civilization; but when we begin to estimate the amount of nitre taken out and the amount still remaining in the beds, and compare this amount with the increasing of the world's demand, we are more than philosophically interested—we are practically frightened. We see that what has happened to guano will inevitably happen to saltpetre. It is a matter of plain, hard, cold-drawn fact, that these saltpetre beds will not last longer than 20 years, if present conditions continue."

"If present conditions continue." There is the saving clause. They need not continue. The true foundation of conservation is in that pavilion—the dairy cow. Let me tell you. Along that road the farmer hauls a load of corn—50 bushels, and he will sell it for $25, and that $25 worth of corn contains more vegetable nutrition than a car load of butter weighing 20,000 pounds that will sell for $6,000. My friends, it is a fact that 50 bushels of corn takes more vegetable nutrition from the soil than a car load of butter weighing 20,000 pounds and selling for $6,000. There is the answer to Prof. Duncan Kennedy; there is the answer to the British Scientific Society. These facts are so impressive to me that when I look at a field of wheat, corn or rye, I always wonder how much vegetable nutrition it has taken from the soil. Prof. Hopkins gives the figures along these lines, that every bushel of corn takes 13½c, a bushel of wheat 18c, rye 14c, a ton of hay $6, and through the list he gives you figures at which rate you rob the soil when you do the work as we have done it too long in Iowa.

I want to call your attention to another thing. I happened to be riding on a train one time and met Henry Ward Beecher. When he learned my business and work he said: "I have always considered the cow the great means of advancement of modern civilization." He said he was in the Dakotas and saw vast fields of deserted crops. He said people had gone in there, planted wheat and oats, become discouraged and moved on leaving nothing but wasted efforts. He said if a man had a single cow he would have to be there in the morning and at night, and he wouldn't go very far away and he would not stay alone. He would build a home, and it is around the hearthstone that civilization is advanced.

I have had the privilege of visiting every country that has developed a bred of dairy cows, and I want to say that no country has ever developed a great breed of dairy cattle whose people were not home builders —home-loving people. I had the privilege three years ago of visiting several of the little islands in the English Channel. I was looking for a few heifers for my farm. I noticed a few likely yearlings and asked the price. I was told there was no price on them. Then I asked him if there was a price what would it be. I found that money could not buy them. In the house I saw on the wall a painting of four beautiful cows. I was told that in 1858 this man's grandfather showed these four cows in England and won with them. The second cow was a champion cow and that heifer was a descendant from that cow. We walked out of the house, and I noticed there over the door a sign upon which was inscribed the figures 1640. I said to the man: "This is a very old house." "Yes, it is," he replied. "Is that the year it was built," I asked him. "Oh, no, that is the year we moved in." I said to myself, "here are a people with beautiful homes, who depend on the dairy cow as a means of sustaining the home, and in my country we don't save the land; we don't build homes on farms. That night I rolled and tossed on my bed and wondered if Iowa would ever have these beautiful homes; if Iowa would ever have any places that were intended to be called home not only for the man who lived there at the time but for the man's son and his son's son.

Friends, if we are to have homes of this kind and land to support them, I want to say to you that we want to look to the true foundation of it all—the dairy cow.

There is another thing. We all talk about commerce and industry, etc., but the real mission is the development of man. In connection with this I want to recall a story. One day the great McKinley was riding through Iowa. He had been asked to speak early in the morning. His car was side-tracked, and as he was dressing he looked out and saw a boy running on the frosty grass barefooted. He hurried to where the cows were, and, arousing them, he stood where they had lain and warmed his feet. McKinley told this story to his cabinet, and every member of that great body recited a similar experience. Every one had been raised on a dairy farm. Every one told how they had hurried out after the cows on frosty mornings and had warmed their feet as Mr. McKinley had seen this boy do.

I want to say that the home means contentment, and contentment means better living, and I tell you good people of Iowa that we have a great problem of conservation facing us here. We are all believers of conservation when it is in the mines of Alaska or on the Pacific slope, but I believe conservation, like charity, should begin at home. These men who are keeping cows are the real conservationists. If they have their way we will have in Iowa true homes—real homes. You never will build homes in Iowa; Iowa will never be truly great as long as we treat our farms merely as a place to secure a competency on which to retire. We must build homes on our farms, and instead of saving the money to buy a lot in town we must put that money into the home, a permanent, beautiful home. You look over the people of your own acquaintance—men who have worked on farms in Iowa, and every one's ambition was to go to town. Every member of the family was racing to beat them to town. I recall one instance of a man that owned several sections of land in Iowa. He started out to make it a dairy farm. I visited him one Sunday, and, looking over the fence I saw the bull he expected to breed dairy cows from. I told him I had seen that animal before. That man had put a milking shorthorn at the head of his herd to keep his boys on the farm. Today one of them is driving a dray and the other working in Waterloo in a factory for $2.25 per day. Draw an indictment against that man, against the people who led him to do it. The state is covered with tragedies of that character. We love the state. If we love it as we should we love its farms. We know that the home on the farm and the farm for a home is the destiny of every man who loves the state. I thank you.

The President: In introducing the next speaker it is only fair to say that this is the third time within a year that the Iowa State Dairy Association has called upon him. I mention this to show that he is interested in the work that we are interested in and all work of this kind which is of importance to the state. I have the honor of introducing to you Governor Carroll, who will address you.

ADDRESS.

GOV. B. F. CARROLL, DES MOINES, IOWA.

Ladies and Gentlemen: I don't see why anybody should have been invited to speak here except Mr. Marsh. I thought I had been thinking along some practical lines with regard to the advancement of the dairy interests of the state, but I find that my thoughts have been so superficial that I hesitate to offer them to this audience.

I am interested in the dairy interest of this state. I am interested in it as I am in very many other things that pertain to the state's welfare. My interest in the dairy business is a conservation proposition, but I will confess to you frankly that I never realized the full purport of the thing as I realize it now after listening to that speech by Mr. Marsh. I had not studied the commercial side of it to the extent that Mr. Marsh has suggested to us.

Two or three years ago members of this association commenced to interest themselves in getting a state appropriation in order that they might broaden the scope of their work, and they approached me as a candidate for office. Now I am rather shy to make promises, but I did say to them that if, in the wisdom of the legislature it believed that a small appropriation could be spared without curtailing in any way the work of other departments I should be glad to see an appropriation made. I didn't then understand the reason why they were asking for that appropriation as I understand it tonight. If Mr. Marsh's address could be laid upon the table of every farmer in Iowa it would be worth hundreds of dollars to the state.

The members of your committee said to me that they were not able to carry on to the extent they wanted to the work of the Iowa State Dairy Association. I understand better now what they meant. "We can't get all of our farmers interested in attending these association meetings," they said to me, "but if we can provide means and expense money whereby the representatives of this association could go among our farmers and organize them into associations and carry on schools of instruction we could greatly enhance dairy interests. We are making money hand over fist in getting people interested in this matter to the extent that they will improve their herds. That isn't all. Mr. Marsh has suggested to you that we can take from the soil in the form of butter many more dollars than we can take in corn and impoverish the soil much less. He might have continued and said that when we are taking from the soil corn, we are not getting the benefits of anyways near the amount of production that the soil could yield. I am leading up to another side of the dairy question.

I have been traveling over the state a little more recently than heretofore and I see signs of conservation along the lines I am thinking just now. Instead of permitting the fodder to stand on the fields and be plowed under or burned up, I see that we are putting our fodder into silos. I am not an agent for any silo manufacturing company, but it is a question of conservation or rather of waste when we grow corn on our farms and lose a large percent of the revenue in the fodder. Mr. Marsh has shown you the conservation side of the milk and butter proposition. He has shown to you the advantage of knowing the character of stock you are breeding. He has discussed that so much better than I could that I am not going to try to add anything to it. But it is a great waste if we are using more of the soil of this country than is necessary even to feed Mr. Marsh's cows. He has said to you that a cow to which he referred was producing four times as much butter-fat as the average cow of the state. One of two things is true. Either we are losing three-fourths of the feed that we are feeding to the cows or we are losing three-fourths of the butter or butter-fat we ought to get. We should have just one-fourth the number of cows we have to produce our butter and save three-fourths of the feed or we should feed the number we have now and get four times the amount of butter-fat. We are failing to conserve our interests with regard to these matters. Lately when we think of conservation we only think of the quarrel between Pinchot and Ballinger. I know Pinchot and I don't know Ballinger, neither do I know much about the quarrel, but I know that when we think of conservation we think about it as being on the Pacific slope. It is over some river finding its way into the Pacific or some coal field in Alaska or some forests in the region of the Rocky mountains or some arid desert. I would not have you think less about these things. I would have you learn more about them, but just as Mr. Marsh suggested, I want you to understand that we have a greater proposition of conservation in Iowa so far as you and I are concerned than the conservation matters we have been hearing so much about. What do I mean? I went down into a mine the other day and I observed some things down there. I do not know whether you folks are miners or not, but I observed that great blocks of coal were being left as posts and pillars to support the roof. I said to the superintendent, "What per cent of this coal do you leave permanently in the ground?" He said, "We leave about 25 per cent." I think the average of coal left in the mines of this state is well nigh 50 per cent of all the coal in the mines. We have lost, therefore, from 25 to 50 per cent of the coal of the abandoned mines of this commonwealth. I said, "Is it absolutely necessary that you leave coal there." There are mines which operate on the long wall plan. They go along with their picks and take the coal out a few feet at a time, throwing the refuse behind them and taking the whole of the coal as they get to it. But the mine I was in was operated upon the room system. They drive an entry way. They make a room off that entry and mine in that way for a distance, go a few feet further and open up another room and the coal between the rooms must be left. I said, "Should you not mine on the long wall system? Why don't you?" "Because," he said, "we can mine on the room system a little cheaper." Now, just for the purpose of getting a little more money at the present time they are willing to waste from 25 to 50 per cent of the coal. Sometime way down the line the coal supply of this country is going to give out. We are not conservationists with regard to the coal interests of our commonwealth. That is another thing we haven't been thinking about. Should not we people think about these things in Iowa as well as on the Pacific coast? What are we going to do when the coal is gone? Some stand ready to say that we will be utilizing the heat from the sun by that time. Possibly that is true. I am inclined to believe that theory. If you had said to me a few years ago that such a thing as a phonograph were possible I would have said no. If you had said that Teddy would have gone up in a flying machine I would have called you crazy. So I say when some man says we are going to draw heat from the sun and use it don't dispute him. But one thing I do know; I know that every day of the year for 365 or 366 days there are thousands of horse power of water running down the Cedar River and all the other rivers in the state of Iowa that we might be using. Don't say anything about navigation. It is a conservation proposition that I am considering. Thousands of dollars in value are passing by us unnoticed. We can see the Pacific Ocean but we can't see a dam on the Cedar River 100 feet away from us. Why is that? I want to get the eyes of the people of this state fixed upon Iowa and its great conservation proposition. This western conservation proposition has been brought about by reason of the fact that individuals, companies or corporations have sought to get control of those interests. I don't know whether you are aware of the fact or not but certain individuals, companies or corporations have their eyes fixed upon Iowa's conservation propositions and I know that in one of the little streams of this state a non-resident corporation has bought up three or four of the dams for the purpose of controling the water power of that stream.

At the last session of the legislature we established a commission which we call a Water Ways Commission, to institute an inquiry into some of these great questions. These men have said to me that after they had made their surveys of some of the streams and determined the place where water power sites could be located that these corporate interests have endeavored to learn of the location and the value of these places in order that they might acquire them. You say, haven't we any laws? Yes, but my judgment is that they are not adequate. So it is time to turn your attention to Iowa's conservation matters.

One of the greatest conservation questions that has ever come before our state is that of drainage. I have just come from what a few years ago we would have called the slough water district of Iowa. I rode 70 miles over Calhoun county and before we had gone 50 miles we passed a slough that is not yet drained out and the only one we saw in that distance. One of the men with me said, "If you had taken this trip three years ago you would have passed 100 of these." I inquired what had become of them. He said, "That corn over there is growing where I used to wade through the water with hip boots and often got in over the boot tops." We have drained these sloughs. I made some reference to it to the county treasurer and he handed me a card and said: "Last year we collected in this county $418,000 of drainage tax. Nearly twice as much as all of the rest of the taxes we paid."

While Mr. Marsh has suggested one of the most important conservation matters to you, I have suggested two or three others, and were it not for the fact that Mr. Haugen is here to address you, I could talk on this matter for an hour. I think I have said enough to help you to understand that there are a great many questions in Iowa that must be solved. You folks through your representatives and through your state officials ought to unite and turn your attention to these things and help us to solve them. We need to protect our soil, our coal supply and our water power, and I want you to know that those are the lines along which you ought to be working.

I thank you.

The President: I am sure we all enjoyed Governor Carroll's address and I know I voice the unanimous sentiment of the members of this association when I tell the Governor that we appreciate his coming very much.

If there is no other business to come before the convention, we will stand adjourned *sine die.*

Adjournment.

PART IX

EXTRACTS FROM

STATE DAIRY COMMISSIONER'S REPORT OF 1910

TWENTY-FOURTH ANNUAL

W. B. BARNEY, Commissioner

The law creating the office of Dairy Commissioner requires an annual report to the Governor of the state covering the dairy business of the state. Later enactments make this department responsible for the enforcement of the following laws:

PURE FOOD LAW,
PAINT AND LINSEED OIL LAWS,
CONCENTRATED FEEDING STUFFS LAW,
CONDIMENTAL STOCK FOOD LAW,
AGRICULTURAL SEEDS LAW.

The foregoing statement of expenses of this department includes all the salary and expenses of the commissioner and the deputy, and salaries of clerks, though only a minor portion of their time and services can be devoted to the work or connected with the dairy business. The law authorizing the employment of inspectors under the pure food law and providing for their compensation specifies the duties that they shall perform, their services are authorized for the specific purposes of the food law. On the other hand the dairy assistants could often do valuable work along the other lines but their time is more than occupied with the creameries.

This report going back as it does over six month's occupancy of this office by my predecessor may not be as complete as it should.

In looking back through former reports, we notice that the attention of the legislature has been called to the fact that this department is very short of help. Without heeding this, they have continued to enact legislation which has increased the work of the department without giving the extra help to enforce the new laws. The anti-discrimination law and the law for falsely manipulating the Babcock test were both much needed laws and could be made more effective by the addition of at least two more assistant dairy commissioners at salaries of not less than $1,600 each. We wish to lay special emphasis on the compensation they shall have as any high class buttermaker is now receiving from $1,500 to $2,000 per year.

To properly do the work in the state, four men are barely enough. The two we now have are obliged to spend too great a share of their time on the road, as their services are much in demand and covering so large a territory their trips are necessarily long. One more clerk will have to be added to the office force at not less than $1,200 per year to keep pace with the increased business of the department.

Permit me to call your attention to the fact that the receipts of this department for the five months from May 1, 1909, to September 30th, inclusive, were $4,072.44 and for the same period in 1910, $8,672.26, showing a net increase of $4,599.82.

Several new laws will be enacted by the incoming legislature which will make the duties of the department still more arduous. It is recommended that future legislation should authorize the employment of a certain number of inspectors for both food and dairy work all to be paid out of the same fund and authorized to do work in either department. If no provision of this kind is made the State Milk Inspector should be transferred to the dairy department as his work is of such a nature as to make this almost a necessity.

Dairying in Iowa has gone by leaps and bounds for the last three years. There are many reasons for this and the work of the Iowa State Dairy Association is chief among them. Two years ago last spring, the campaign to interest the legislature in their behalf was started, and it lasted nearly a year with the result that they were given $10,000 for the biennial period. We are very sure that it will be an easy matter to show the next legislature that no money was appropriated by the general assembly that has been of more benefit to all the people than has this. The fact that they will be able to properly account for every cent that will be used, and to show that they have collected many hundred dollars to defray the expense of speakers at dairy meetings and pay State Dairy Expert VanPelt his extra salary, should make it comparatively easy to get this appropriation renewed. I would recommend that this be made an annual appropriation of not less than $7,000 and that the law be amended to make the State Dairy Expert's salary $2,000. It would be well enough to put the $1,500 limit on the assistants, but a strictly highclass man like Prof. Van Pelt cannot be secured at less than $2,000, and it is too much of a tax on our dairy friends to ask them to donate the $500 a year, as they have been obliged to do for the last two years. Our legislature should remember that the cost of living has materially increased in the last few years, and that when they go on the market for help they come in competion with commercial institutions that are willing to pay a salary commensurate with the service rendered.

THE VALUE OF DAIRY PRODUCTS.

The public has criticised the dairy farmer on account of the advanced price of dairy products. When the cost of producing a pound of butter or a gallon of milk is compared with the same ten years ago, this criticism is entirely unfounded.

A recent government bulletin gives the cost of maintenance of a cow for a year as a little more than double that of ten years ago. When you take into consideration the value of land, the cost of buildings, labor and the various things that must be counted, we are not surprised at this conclusion. Feed has more than doubled in value. Going a little further back—say twenty or twenty-five years—the best of bran sold for $4.00 per ton and the finest of clover hay for $3.50 per ton. Is it not fair to say that if milk sold at five cents per quart at that time, good milk should bring ten cents per quart now. If it were understood by the housewives and the people generally that a quart of four per cent. milk contained more body supporting food than three-fourths of a pound of the best beefsteak and as much as eight average eggs, the sale of milk would be doubled. Beefsteak costs from twenty to twenty-five cents per pound and the dairy people should be more diligent than they have been in educating the public along these lines. Milk is the most nearly perfect of all foods, as it contains in an easily digestable form all the nutritive elements required for the body. The increased cost brings us face to face with another question: "How can we reduce this cost of production?" We may, by the use of a silo, nearly double the value of our corn crop, but there is no way to buy bran, gluten and other feeds at less than market price.

BETTER COWS A NECESSITY.

Recent reports show that a cow that produces four hundred fifty pounds of butter fat per year does so at about half the cost per pound as does the one that only makes two hundred pounds per year. This means that we must have better cows or make no money. The one hundred and fifty and two hundred pound cow must be replaced as soon as possible with those that will yield two hundred and fifty to three hundred and fifty pounds. An increase of fifty pounds per cow would mean an increased income to Iowa of $18,750,000. We should not be satisfied with this. One hundred pounds per cow is not an extravagant amount to anticipate. This would give the net increase of $37,500,000. How insignificant the small appropriations made for this department appear compared with the former figures. The distribution of this money over our state would mean the betterment of the conditions of every man, woman and child. The general business of the state would receive an impetus. Every man from the common laborer to the merchant, banker or professional man would finally come into his share.

YEARLY TESTS.

The Iowa Cow Culture Club and the offering of $1,000 by W. W. Marsh of Waterloo, Iowa, for yearly tests conducted by the Iowa State College at Ames under the supervision of the club, has done a world of good for the dairy interests of our state. We are glad to know this test will continue another year. Other states are now taking up a work along the same plan as it has become a recognized fact that yearly butter records are much more valuable than those of shorter duration.

DAIRY TRAINS.

The dairy train run over the Chicago, Burlington & Quincy railroad in southern Iowa, by the Iowa State Dairy Association, was the beginning of a new era in that part of the state and the interest in dairy work has been aroused to such an extent that several new creameries have been built and the demand for dairy cows and pure bred dairy sires has increased within a year more than one hundred per cent. No section of our state is better adapted to dairying than the southern part and we must give that territory special attention as the opportunity is here now for development.

NORTH IOWA DAIRY IMPROVEMENT ASSOCIATION.

Last year the Iowa State Dairy Association employed Mr. Patterson as an assistant. He did his work so well that when the North Iowa Dairy Improvement Association was formed, he was induced to accept a place with them. Briefly, the plan of this association is as follows: Ten creameries agree to an assessment of one-tenth of one cent per pound on their output. This fund is used to pay Mr. Patterson's salary and expenses, and he devotes his entire time to them and their patrons. The government has wisely authorized one of their experts, Mr. F. L. Odell, to give this work a part of his time. This is the first association of its kind that has been organized, and although the work is new splendid results are already being shown. The work is being watched by the entire country.

EXPERIMENTAL WORK UNDER GOVERNMENT SUPERVISION.

The work at Algona under the direction of E. B. Heaton, Junior Dairyman, employed by the government, is a new one and the state is most fortunate in securing this aid which is entirely at the expense of the government. The plan is to place Mr. Heaton's services at the command of a community for a term of three or four years. To begin with, he secures all possible data as to their conditions. He is expected to devote his time to teaching the dairymen and farmers how to produce more and better dairy products by breeding up their herds and by the use of more scientific methods of feeding. He is supposed to spend a part of his time with their creamery. This work, as we understand it, is to be under the direction of B. H. Rawl, Chief of the Dairy Division, Washington, D. C. Mr. Rawl has asked the professor in dairying at Ames and the State Food and Dairy Commissioner to co-operate with him in the management of the work and they have consented to do so.

We consider this a work of the greatest importance; the fact that most of the work will be directly with the producer and that the government expert comes in direct contact with the man who owns the cows makes it a most novel and interesting experiment.

THE YOUNG MAN SHOULD STAY ON THE FARM.

Many of us getting into the afternoon of life can easily recall the fact that not more than a score of years ago if there were three or four boys in a family on the farm, it was very generally decided that the one showing the most marked characteristics as to business ability, should be sent to town as most any of them could farm.

Under present conditions we know of no reason why this should be so, as there is no more dignified or respectable calling than that of a successful dairy farmer. There is none other that will put a greater premium on brains. Therefore, the young man or boy who may be anxious to get to the city or town may be overlooking an opportunity to make himself a most useful and influential citizen of our commonwealth by leaving the farm. If you have the elements that go to make up a successful career they may as well be developed in this vocation as any other, and the chances are that a competency for old age is as apt to be accumulated as though you went to the city. We recently learned that about eighty-five per cent of the street car conductors and motormen in a city of 150,000 inhabitants were formerly boys on the farm. We do not refer to this out of any disrespect to these men, but to show that only a small per cent of those leaving the farm find very easy or lucrative positions. Free mail delivery, telephone service, better roads, the automobile and modern conveniences in the farm home, all go to make farm life more attractive.

CITY MILK INSPECTION.

This department we have endeavored to make more efficient by appointing as State Milk Inspector, Dr. O. P. Thompson, to visit at frequent intervals the local city milk inspectors appointed by us in the various cities of the state, and have general supervision over them.

The results of his work during the short time he has been so engaged fully justify this appointment and we hope and expect thereby to increase the efficiency of this department. We are handicapped in this work in that the law authorizing the appointment, by us, of milk inspectors, in cities of 10,000 or over, was passed nearly twenty years ago and the compensation we are allowed to pay these inspectors was then fixed by law at $3.00 per day for the time actually employed. I need only to remind you that the price of labor of all kinds has advanced very materially during this time. It has always been inadequate, and should certainly be increased as a number of other cities having passed the 10,000 mark by the census just taken will be demanding local milk inspectors.

Formerly an inspector's principal duty was to collect samples from wagons and stores, take these samples and examine them for adulteration and the use of preservatives, and test them for the percentage of butterfat. Such work was and still is very important and essential, but we realize that to get clean and wholesome milk it is necessary to start with the producer and visit and inspect the cows, barns, utensils and facilities for making pure milk by the dairyman.

To secure an inspector who is capable of doing this work is not an easy task, for he must be a man with tact and judgment, able and willing to give the producer a reason for every requirement he may make. He should be an instructor first and a prosecutor only in cases of willful and persistent neglect on the part of the dairyman to obey the prescribed rules and regulations.

It is the policy of the department to appoint local milk inspectors in such cities, only, as evince sufficient interest in their milk supply to appoint a city inspector, with the understanding that the same man shall be both city and state inspector. But we emphatically disparage the tendency in some cities to make this a political job, and insist that the appointee be the most efficient man available.

The greatest need that is confronting the public today with reference to the milk question is education both on the part of the consumer and the producer.

Men more conversant with the dairy business as a business should be made members of our Boards of Health.

The law requiring all milk wagons, stores or places where milk is sold to take out a license should be amended so as to include all municipal corporations. The Commissioner should have the right to withhold a license from an applicant whom he may deem unworthy or revoke any license issued by him to an owner who violates the terms thereof.

The adulteration of milk and cream by the addition of any preservative has practically ceased in this state. Most of the prosecutions are based on the sale of milk low in butterfat or on sales of unclean milk. Very few samples of watered milk have been secured and most of the milk found to be low in butterfat is in that condition because a part of the cream has been removed.

Quite a few of the creameries continue to buy milk by the hundred-weight and where this custom prevails there is considerable temptation for the producer to remove a part of the cream before offering the milk for sale. About one-third of the prosecutions for the sale of milk low in butter-fat have been made against patrons of creameries buying milk by the hundred-weight. The balance were for the sale of such milk by dealers, mainly in the large cities. Six cases were successfully prosecuted for false manipulation of the Babcock test.

Table showing number of permits issued to city milk dealers for each year from 1903 to 1910. In each case the year ends on July Fourth.

	1903	1904	1905	1906	1907	1908	1909	1910
Number	783	780	827	803	1006	1078	1149	1106

Cities	Population	Inspectors
Boone	10,347	
Burlington	25,741	M. E. Flynn
Cedar Rapids	32,811	Phil Pray
Clinton	25,577	A. A. Sutton
Council Bluffs	29,292	Peter Smith
Davenport	43,028	H. J. High
Des Moines	86,368	J. Howard Sasseen
Dubuque	38,494	Dr. F. J. Kennedy
Fort Dodge	15,543	D. C. Benjamin
Keokuk	14,008	Arthur J. Anderson
Iowa City	10,091	
Mason City	11,230	
Marshalltown	14,000	J. A. Turner
Muscatine	16,178	Dr. C. J. Hackett
Ottumwa	22,012	
Sioux City	47.848	E. C. Pape
Waterloo	26.693	

TUBERCULOSIS IN THE DAIRY COW.

Bovine tuberculosis and its relation as a causative factor in human tuberculosis, is a subject that has engaged the earnest attention of the people, particularly of the cities, as it relates to the city milk supply, and ordinances intended to exclude the milk of tubercular cows were passed by many of the municipal authorities. These ordinances being submitted to the supreme court were adjudged unconstitutional. It would seem that it is to say the least, unwise for cities to undertake to make laws on this subject until after the state has first made a move in this direction, as it is a question of too large magnitude to be handled by any city, county, or possibly even the state, until after the federal government has taken definite action.

I also believe that there is a tendency to exaggerate the danger to human life from this cause. The statement is often made that cows "rotten with tuberculosis from lungs to liver" are giving milk, when any practical dairyman knows that a cow in this condition gives no milk. If the slaughter of the cow not passing the tuberculine test is to be insisted upon as a public health measure, then the public should bear at least a share of the financial loss incurred thereby, as now practiced in some of our sister states, and if the dairy cow, why not all other cattle, as tuberculosis is an infectious disease and your cow would be in constant danger of contracting the disease from her brother, the steer.

All that the dairyman asks is a square deal. Why should he be required to submit his herd to the tuberculine test and suffer the loss of those that react, when his neighbor is permitted to place untested cattle in an adjoining pasture after he has his herd cleaned up?

In my opinion but little headway can be made in the battle against bovine tuberculosis until the owner of the cow is more willing and anxious than any other man to clean up his herd, and laws passed to which he does not subscribe would be a dead letter. His co-operation may be most readily secured when you can convince him that it is to his own financial advantage to rid his herd of this disease. That it would pay him, we are convinced. The tuberculous cow in a herd renders all other cattle in that herd liable to infection and all hogs following such an animal are pretty sure to contract the disease, and tuberculosis among hogs is a question that the farmers of Iowa should reckon with now before it becomes more widespread.

Iowa is in a large measure indebted to some of the eastern states for the introduction of this disease into our midst. As a number of years since, when this question was being agitated in the east a large number of dairy cows that had reacted to the tuberculine test were shipped into Iowa, particularly in the neighborhood of our cities, and sold to the local dairymen and these cows became the source of infection to the herds into which they were thus introduced. This in the days before Iowa dairymen had heard anything about tuberculosis in cattle. This agitation has been conducive to much good, in that it has aroused the people as nothing else could have done to the danger of uisng dirty and unsanitary milk.

LAW MAKING APPROPRIATION FOR THE STATE DAIRY ASSOCIATION.

Section 1. Whenever the organization now existing in the State of Iowa and known as the Iowa State Dairy Association shall have filed with the Secretary of State of the State of Iowa verified proofs of its organization, the names of its president, vice-president, secretary and treasurer, and that it has one hundred (100) bona fide members, such association shall be recognized as the Iowa State Dairy Association of the State of Iowa, and be entitled to the benefits of this act.

Sec. 2. For the purpose of aiding in the promotion and development of the dairy industry of the State of Iowa, such association shall cause to be made such inspection of dairy farms, dairy cattle, dairy barns and other buildings and appliances used in connection therewith, dairy products and methods as they shall deem best and shall arrange to furnish such instruction and general assistance, either by institutes or otherwise, as they may deem proper to advance the general interests of the dairy industry of the State.

Sec. 3. For all the purposes of this act the said association shall act by and through an executive committee of seven (7) members, consisting of the president, vice-president, secretary and treasurer of the Iowa State Dairy Association, the dean of the Iowa State College of Agriculture and Mechanic Arts, and the Professor of dairying at the same institution and the Food and Dairy Commissioner in the State of Iowa.

Sec. 4. They may employ two or more competent persons who shall devote their entire time to such inspection and instruction under the direction of the said executive committee, and who shall hold office at the pleasure of the committee, and who shall each receive a salary of not to exceed fifteen hundred dollars ($1,500.00) per annum, and actual expenses while engaged in such work.

Sec. 5. The salaries of all persons employed under the provisions of this act shall be paid monthly out of the appropriation herein provided and all traveling expenses and all general expenses incurred by the association in carrying out the purposes of this act shall be paid out of the said appropriation and in the manner provided by sections 170-d, 170-e, and 170-f of the Supplement to the Code, 1907, and upon statements filed with the Executive Council as therein provided; but no such bill shall be paid until after it shall have been audited and approved by the association in such manner as the executive committee shall provide.

Sec. 6. The said association may require such reports from their employes as they shall deem proper, and shall make to the Governor an annual report of their proceedings under this act, which report shall be published as a part of the proceedings of the annual convention of the Iowa State Dairy Association.

Sec. 7. For the purpose of carrying into effect the provisions of this act and the payment of all expenses connected therewith, there is hereby appropriated out of any funds in the treasury of the State, not otherwise appropriated, the sum of ten thousand dollars ($10,000.00) or so much thereof as may be necessary to pay the salaries and expenses of the employes appointed under the provisions of this act and the expenses incurred by the Iowa State Dairy Association in developing and promoting the dairy industry of the state as by this act provided.

ANTI-DISCRIMINATION LAW.

CHAPTER 222, ACTS OF THE THIRTY-THIRD GENERAL ASSEMBLY.

Be it Enacted by the General Assembly of the State of Iowa:

SECTION 1. That the law as it appears in section five thousand twenty-eight-b (5028-b) of the Supplement to the Code, 1907, be amended by adding after the period at the end of said section the following:

Any person, firm, company, association or corporation, foreign or domestic, doing business in the state of Iowa and engaged in the business of buying milk, cream or butter fat for the purpose of manufacture or of buying poultry, eggs or grain for the purpose of sale or storage, that shall for the purpose of creating a monopoly or destroying the business of a competitor, discriminate between different sections, localities, communities, cities or towns of this state by purchasing such commodity or commodities at a higher price or rate in one section, locality, community, city or town, than is paid for the same commodity by said person, firm, company, asociation or corporation in another section, locality, community, city or town, after making due allowance for the difference, if any, in the grade or quality, and in the actual cost of transportation from the point of purchase to the point of manufacture, sale or storage, shall be deemed guilty of unfair discrimination which is hereby prohibited and declared to be unlawful; but prices made to meet competition in such locality shall not be in violation of this act, and any person, firm, company, association or corporation or any officer, agent, receiver or member of any such firm, company, association or corporation fund guilty of unfair discrimination as defined herein, shall be punished as provided in section five thousand twenty-eight-c (5028-c) of the Supplement to the Code, 1907.

The penalty fixed in section five thousand and twenty-eight-c (5028-c) is a fine of not less than $500 nor more than $5,000 or imprisonment in the county jail not to exceed one year or both penalties.

The following letter was written a short time after the passage of the above law and gives the opinion of Attorney General Byers on certain points and will bear a careful reading:

SIR.—I am in receipt of your communication of the 3d inst., requesting an interpretation of chapter 222, acts of the thirty-third general assembly which amends section 5028-b of the supplement to the code 1907, relating to unfair discrimination. You request to be advised specifically:

1. As to whether the act requires a purchaser of cream to pay the same price to all persons throughout the state on the same day.

2. In the case of a cream purchasing agent, buying cream in the locality where there is a local creamery, is the cream purchasing agent permitted to pay a higher price in that locality than is paid by his employer elsewhere, and if so to what extent.

3. If the purchaser raises the test on butter fat above what is actually shown by the test would this constitute a violation of the act?

4. Is the Food and Dairy Department charged with any responsibility in the enforcement of this statute?

1 and 2. Your first and second questions are so closely related that they may be answered jointly.

The purpose of the act was to prohibit any person, firm, company, association or corporation doing business in this state and engaged in the business of buying milk, cream or butter fat for the purpose of manufacture, or of buying poultry, eggs or grain for the purpose of sale or storage from destroying the business of a competitor or creating a monopoly by paying different prices in different parts of the state for the same grade and quality of the articles purchased after making due allowance for the difference in transportation from the point of purchase to the point of manufacture, sale or storage. The thing prohibited by the act is the discrimination in price for an illegal purpose, viz.: For the destroying of competition or the creating of a monopoly. The act itself, however, permits the paying of a different price in one place than is paid generally by the same person at different points throughout the state, provided the change in price is made in good faith to meet competition in a particular locality.

3. The payment of a different price than that generally paid throughout the state for the same article, considering the difference in cost of transportation, by the indirect method of fraudulently reading the butter fat test is as clearly illegal and a violation of the act as though a different price were paid in the regular way, provided that this is done for the purpose of destroying the business of a competitor or creating a monopoly.

4. The enforcement of this act is by section 5028-c of the supplement to the code 1907, especially enjoined upon the county attorney and the attorney general.

I conclude, therefore, that the only duty incumbent upon you in reference to this act is that which necessarily results from the nature of the act and its relation to your department.

Considering that complaints for violations of this act will constantly be presented to your department, I suggest that you refer all such complaints to the county attorney of the county where the law is violated, and also to the department of justice.

H. W. BYERS,
Attorney General.

H. R. WRIGHT,
State Food and Dairy Commissioner.

June, 1909.

Prosecution has been undertaken in two counties of the state for alleged violation of this act and both cases will no doubt come to trial within a few months. The outcome will be watched with much interest and will likely have the effect of making camplaints of this character fewer in number.

PRICE OF BUTTER.

The table given herewith shows the average price of extra western creamery butter in the New York market to have been $.3054 for the past year. This shows an increase of one and one-third cents per pound over the preceding year, and shows that butter has followed the general increase in prices of produce. The average price of butter for the year ending November 1, 1910, is $.0384 higher than the average for the past eleven years.

Notwithstanding the high price received for butter, the make of butter decreased practically eight million pounds from the previous year. It is not easy to explain the cause of this decrease and it is no doubt due to a number of different causes. The increase in amount of milk necessary to supply the larger cities has no doubt been responsible for a part of the decrease in butter turned out by the creameries. The demand for cream for the manufacture of ice cream has also played a part in bringing about this decrease. Few people realize the rapid growth of the ice cream business during recent years. Five factories in the city of Des Moines alone have a daily output of 1,700 gallons during the ice cream season.

Considerable cream is shipped into this state from outside points by large centralizing creameries located near the border of the state. Large quantities of cream are also shipped from points in Iowa to centralizing creameries located outside of Iowa. It is impossible to determine just what influence this exchange of cream in the manner above mentioned has on the figures given in this report, but it is no doubt responsible for at least a part of the apparent decrease in the amount of creamery butter manufactured in the state.

One of the tables given in this report shows the amount of butter produced in each county in which creameries are located. Since the introduction of the centralizing creamery system these figures have been more or less incorrect as reported herein, due to the fact that some of the cream reported in a certain county, is produced in another county and in some instances outside of the state. The report given of counties where local creameries only are found, very nearly always represents the amount actually produced.

SHOWING AVERAGE MONTHLY PRICE OF EXTRA WESTERN CREAMERY BUTTER IN NEW YORK MARKET.

Month	Twelve months ending Nov. 1. 1899	Twelve months ending Nov. 1. 1900	Twelve months ending Nov. 1, 1901	Twelve months ending Nov. 1, 1902	Twelve months ending Nov. 1, 1903	Twelve months ending Nov. 1, 1904	Twelve months ending Nov. 1, 1905	Twelve months ending Nov. 1, 1906	Twelve months ending Nov. 1, 1907	Twelve months ending Nov. 1, 1908	Twelve months ending Nov. 1, 1909	Twelve months ending Nov. 1, 1910
November	$.2337	$.2600	$.2487	$.2412	$.2650	$.2317	$.2481	$.2350	$.2762	$.2725	$.2957	$.3095
December	.2160	.2720	.2540	.2510	.2920	.2423	.2688	.2480	.3164	.2887	.3131	.3490
January	.1975	.2650	.2262	.2425	.2762	.2270	.2910	.2650	.3080	.3069	.3152	.3344
February	.2100	.2500	.2250	.2862	.2600	.2517	.3218	.2709	.3254	.3233	.3009	.2964
March	.2075	.2550	.2212	.2840	.2860	.2452	.2807	.2700	.3061	.2840	.2953	.3263
April	.1962	.1960	.2099	.2825	.2725	.2284	.3008	.2188	.3069	.2855	.2708	.3113
May	.1790	.2012	.1900	.2275	.2200	.2012	.2371	.2017	.2501	.2369	.2658	.2843
June	.1880	.1950	.1925	.2195	.2160	.1803	.2049	.2022	.2360	.2329	.2581	.2792
July	.1835	.1960	.1960	.2131	.2012	.1767	.2056	.2062	.2481	.2243	.2623	.2831
August	.2000	.2100	.2050	.1990	.1940	.1793	.2111	.2257	.2488	.2285	.2719	.2938
September	.2262	.2150	.2110	.2170	.2075	.1947	.2068	.2462	.2781	.2388	.3013	.2989
October	.2400	.2190	.2200	.2362	.2100	.2095	.2184	.2611	.2915	.2673	.3064	.2996
Average val. per lb. per year	$.2065	$.2278	$.2165	$.2416	$.2417	$.2140	$.2487	$.2375	$.2826	.2658	$.2880	$.3054

ADULTERATED BUTTER.

A few Iowa creameries have been called upon to pay a license and fine for the manufacture of adulterated butter since the last report was issued. Agents of the Internal Revenue Department are constantly on the watch for butter containing more than sixteen per cent of moisture and any creamery caught with adulterated butter can have little hope of escaping the assessment. Every manufacturer should know just what kind of a product he is placing on the market and with reasonable care on the part of the one making the tests no trouble will be experienced. No prosecutions have been undertaken by this department even where tests made have shown butter to contain more than sixteen per cent of water. The Iowa law requires that butter shall contain not less than eighty per cent (by weight) of butter fat. With the Internal Revenue Department fixing a limit of sixteen per cent water and the state law requiring not less than eighty per cent of butter fat, butter low in salt may be subject to seizure under the government ruling and yet come well within the limit fixed by the state law.

OLEOMARGARINE.

The amount of oleomargarine manufactured in the United States for the year ending June 30, 1910, was far in excess of any previous year, being 141,862,282 pounds.

This is about fifty-one million pounds more than was produced last year and is sixteen million pounds more than was ever reported in a single year even under the two cent tax. The various manufacturers of oleomargarine have been putting forth great efforts to increase the sale of their product and have advertised their goods in almost every locality.

How well they have succeeded in their purpose is revealed by the figures given above and oleomargine is now on sale in nearly every town in Iowa. Even in the dairy districts some of the substitute is being sold.

Little trouble has been experienced on account of dealers not complying with the law relating to the handling of oleomargarine although in a few instances inspectors from this department have discovered consignments that had a yellow color in imitation of butter. Prosecution has been started wherever evidence that the law was being violated could be secured and some of these cases have resulted in fines being imposed on the violators. The number of retail licenses issued for the sale of oleomargarine in this state for the year ending June 30, 1909, was 347.

The report shows 1,623 licenses issued for the year ending June 30, 1910, and 1,277 have been issued during the first four months of the present year. This statement gives a fair idea of the growth of the oleomargarine business in the state.

CHEESE.

The last report issued from the Dairy Commissioner's office contained a list of nine cheese factories which were in operation. Only five factories reported for the past year and the amount of cheese given is slightly less than 300,000 pounds.

The cheese factories have never been able to successfully compete with butter-making plants in this state, and the make of cheese has steadily decreased for several years. The extreme care necessary in the handling of milk for the production of cheese, coupled with the fact that the average farmer depends on skim milk as feed for his calves and pigs, is no doubt largely responsible for the lack of interest in cheese production.

TABLE No. II.

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER OF POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE AND POUNDS SOLD TO PATRONS IN IOWA SO FAR AS REPORTED BY THE CREAMERIES

Counties	Number reporting	Pounds of milk received	Pounds of cream received	Pounds of butter made	Pounds sold to patrons	Pounds sold in Iowa
Adair	5	237,052	1,926,928	720,311	17,394	26,543
Adams	3	----------	512,763	148,259	1,055	3,013
Allamakee	8	----------	7,073,599	1,975,070	24,950	82,928
Appanoose	----	----------	----------	----------	----------	----------
Audubon	9	1,102,839	2,675,924	1,141,754	57,223	24,243
Benton	6	128,198	1,169,223	994.867	8,962	6,888
Black Hawk	14	30,857,819	2,864,562	2,197,890	123,074	488,039
Boone	4	1,278,058	654,080	274,864	17,349	32,363
Bremer	25	70,692,659	387,147	3,150,742	265,965	92,332
Buchanan	8	20,503,856	2,312,961	1,513,579	119,659	63,605
Buena Vista	3	----------	2,348,092	703,888	6,241	5,613
Butler	14	22,246,702	3,168,253	1,795,443	123,366	49,927
Calhoun	4	789,079	7,509,786	1,488,314	7,213	17,112
Carroll	6	161,324	3,863,202	1,538,128	14,460	25,296
Cass	2	----------	1,241,006	355,683	2,816	16,911
Cedar	3	----------	545,291	183,392	4,980	101,356
Cerro Gordo	5	653,245	3,646,178	1,168,186	13,597	76,972
Cherokee	2	----------	650,695	213,461	1,011	75,780
Chickasaw	12	23,975,950	4,432,676	2,254,556	161,374	63,606
Clarke	----	----------	----------	----------	----------	----------
Clay	7	2,709,012	2,417,223	870,029	56,365	8,450
Clayton	14	13,227,634	5,893,596	2,265,958	73,256	89,948
Clinton	4	1,321,260	3,453,580	1,253,525	16,928	106,382
Crawford	1	----------	2,724,409	1,082,067	----------	----------
Dallas	3	5,495,364	1,331,525	616,164	16,946	47,209
Davis	----	----------	----------	----------	----------	----------
Decatur	1	----------	1,087,703	399,777	----------	22,109
Delaware	15	38,305,141	7,395,749	3,728,183	196,295	194,818
Des Moines	----	----------	----------	----------	----------	----------
Dickinson	5	194,643	1,524,224	455,186	17,114	27,058
Dubuque	17	8,327,053	9,269,771	3,192,528	70,476	383,310
Emmet	4	2,485,869	1,033,051	416,102	24,455	20,969
Fayette	21	46,513,969	5,183,954	3,719,390	242,544	164,630
Floyd	4	432,060	2,741,034	775,862	20,979	113,616
Franklin	6	970,693	4,634,491	1,270,963	40,127	37,648
Fremont	----	----------	----------	----------	----------	----------
Greene	1	247,216	281,927	117,728	2,156	13,344
Grundy	7	5,733,512	2,686,189	1,107,439	52,560	17,717
Guthrie	5	44,064	2,479,297	831,751	22,771	43,757
Hamilton	4	431,878	1,477,529	456,780	9,562	12,009
Hancock	7	----------	3,353,027	907,435	36,930	19,862
Hardin	7	1,073,252	3,470,112	1,158,838	65,236	45,901
Harrison	----	----------	----------	----------	----------	----------
Henry	----	----------	----------	----------	----------	----------
Howard	7	3,538,805	5,237,786	1,353,965	42,709	11,516
Humboldt	7	1,664,773	2,547,498	864,170	38,549	10,777
Ida	1	----------	435,943	161,026	1,204	5,375
Iowa	7	4,002,649	1,534,329	638,329	44,464	26,231
Jackson	11	3,680,434	5,942,358	2,018,952	48,060	87,894
Jasper	2	1,188,572	445,042	189,594	8,380	14,744
Jefferson	2	7,539	573,629	285,209	1,767	141,468
Johnson	----	----------	----------	----------	----------	----------
Jones	11	4,050,638	11,152,649	3,622,724	109,528	77,063

TABLE No. II—Continued.

Counties	Number reporting	Pounds of milk received	Pounds of cream received	Pounds of butter made	Pounds sold to patrons	Pounds sold in Iowa
Keokuk	1		335,000	126,000		
Kossuth	18	5,567,998	5,337,291	1,876,306	152,138	61,834
Lee	1		2,697,404	882,403		50,000
Linn	10	4,915,090	6,998,984	1,996,470	40,340	427,379
Louisa						
Lucas						
Lyon	3		2,588,740	845,274	5,851	34,976
Madison						
Mahaska	2		3,375,000	163,967		5,000
Marion	1		556,746	184,320		53,721
Marshall	3	1,452,036	833,954	549,732	21,243	58,974
Mills						
Mitchell	9	1,065,838	4,923,988	1,330,200	91,979	36,910
Monona	1		228,341	79,192	315	637
Monroe	1		296,745	101,328	1,145	33,500
Montgomery						
Muscatine						
O'Brien	5		1,685,954	590,367	15,209	35,498
Osceola	2		830,753	237,358	5,940	10,180
Page	1	524,006	1,685,554	619,322		76,336
Palo Alto	11	10,681,644	3,379,832	1,636,643	156,532	71,844
Plymouth	5	79,181	1,526 493	494,104	11,528	10,721
Pocahontas	4		754,146	259,126	5,986	5,684
Polk	3	866,000	13,828,621	4,187,315		1,306,692
Pottawattamie	2	1,000,000	3,315,202	1,112,012		300,000
Poweshiek	2		1,326,998	426,829	25,524	27,174
Ringgold						
Sac	7	29,480	1,832,512	636,075	20,699	22,555
Scott	2	12,776	1,906,397	583,752	300	87,772
Shelby	7	2,134	1,730,609	594,281	16,156	14,609
Sioux	7	331,343	4,201,283	1,573,054	26,194	40,652
Story	8	4,468,744	2,286,413	955,470	84,431	153,027
Tama	3		562,846	172,018	2,691	12,716
Taylor	1		2,630,246	751,499	11,250	22,160
Union	1		608,000	181,022	6,075	900
Van Buren						
Wapello	1		2,031,484	580,424		
Warren						
Washington	1		403,134	134,378		
Wayne	1		1,986,437	632,879	4,680	9,360
Webster	1		2,514,177	838,059	460	70,000
Winnebago	7	14,108,724	2,956,634	1,568,205	104,978	34,263
Winneshiek	11		7,637,209	2,354,551	19,302	83,444
Woodbury	2	300,000	17,711,954	6,952,704	8,500	727,432
Worth	9	1,669,019	3,435,408	1,095,879	62,066	19,644
Wright	6		3,806,639	1,031,327	32,838	76,166
Total	485	365,346,824	252,037,119	93,911 906	3,164,400	6,978,086

TABLE No. III.

TABLE SHOWING NUMBER OF HAND SEPARATORS, NUMBER OF PATRONS AND NUMBER OF COWS.

Counties	No. of creameries reporting hand separators	Receive cream by rail	Hand separators reported	No. of creameries reporting patrons and cows	No. of patrons reported	No. of cows reported
Adair	5	1	862	5	1,031	5,726
Adams	3	------	254	3	340	2,190
Allamakee	5	1	1,939	8	1,827	15,361
Appanoose	------	------	------	------	------	------
Audubon	9	------	1,152	9	1,178	8,675
Benton	6	1	659	6	692	5,485
Black Hawk	12	3	842	14	1,645	16,324
Boone	4	1	428	4	462	2,540
Bremer	2	------	42	25	1,779	18,590
Buchanan	7	------	604	8	1,352	11,183
Buena Vista	3	2	890	3	898	6,482
Butler	13	------	1,024	14	1,778	13,983
Calhoun	4	3	560	4	565	3,320
Carroll	6	1	2,891	6	2,891	18,059
Cass	2	1	330	2	351	1,756
Cedar	3	------	264	3	269	1,612
Cerro Gordo	5	3	1,103	5	1,157	9,532
Cherokee	2	1	400	2	450	2,300
Chickasaw	9	------	969	12	1,935	14,995
Clarke	------	------	------	------	------	------
Clay	7	2	733	7	823	5,508
Clayton	13	1	1,609	14	2,118	15,135
Clinton	4	2	1,551	4	1,650	8,320
Crawford	1	1	2,580	1	2,580	10,900
Dallas	2	2	560	3	915	5,660
Davis	------	------	------	------	------	------
Decatur	1	1	380	1	390	2,340
Delaware	12	1	2,056	15	2,910	24,121
Des Moines	------	------	------	------	------	------
Dickinson	5	1	442	5	456	3,850
Dubuque	12	[illegible]	1,145	16	2,932	17,603
Emmet	4	------	281	4	350	2,780
Fayette	14	1	1,404	21	2,823	23,430
Floyd	4	------	436	4	773	4,338
Franklin	6	3	1,071	6	1,211	7,476
Fremont	------	------	------	------	------	------
Greene	1	------	165	1	181	1,267
Grundy	7	2	708	7	916	7,450
Guthrie	5	2	765	5	808	5,140
Hamilton	4	2	616	4	679	3,396
Hancock	7	3	991	7	1,014	7,348
Hardin	7	------	985	7	1,162	7,630
Harrison	------	------	------	------	------	------
Henry	------	------	------	------	------	------
Howard	7	------	1,028	7	1,302	10,441
Humboldt	7	1	1,159	7	1,196	7,901
Ida	1	1	160	1	160	1,000
Iowa	7	------	572	7	690	4,422
Jackson	11	2	1,569	11	1,686	14,069
Jasper	2	------	262	2	296	1,764
Jefferson	2	2	250	2	255	1,555
Johnson	------	------	------	------	------	------
Jones	11	3	3,012	11	3,289	31,670

TABLE No. III—CONTINUED.

Counties	No. of creameries reporting hand separators	Receive cream by rail	Hand separators reported	No. of creameries reporting patrons and cows	No. of patrons reported	No. of cows reported
Keokuk	1	1	120	1	130	970
Kossuth	18	------	1,445	18	1,541	13,931
Lee	1	1	1,500	1	1,900	14,000
Linn	10	2	2,158	10	2,506	19,274
Louisa	------	------	------	------	------	------
Lucas	------	------	------	------	------	------
Lyon	3	2	830	3	890	6,140
Madison	------	------	------	------	------	------
Mahaska	2	2	218	1	220	1,540
Marion	1	1	210	1	210	1,470
Marshall	2	1	395	3	580	3,734
Mills	------	------	------	------	------	------
Mitchell	9	------	1,015	9	1,564	12,000
Monona	1	1	96	1	96	725
Monroe	1	1	175	1	179	940
Montgomery	------	------	------	------	------	------
Muscatine	------	1	------	------	------	------
O'Brien	5	2	1,264	5	1,289	9,670
Osceola	2	------	275	2	277	2,100
Page	1	------	560	1	620	3,100
Palo Alto	14	2	957	14	1,339	10.909
Plymouth	5	1	699	5	717	4,974
Pocahontas	4	1	366	4	370	2,073
Polk	3	3	6,860	3	7,878	35,040
Pottawattamie	2	2	1,300	2	1,450	9,890
Poweshiek	7	1	605	7	677	4,385
Ringgold	------	------	------	------	------	------
Sac	7	1	832	7	865	5,388
Scott	2	2	1,100	2	1,142	6,950
Shelby	7	2	1,052	6	1,033	5,580
Sioux	7	1	1,847	7	1,870	12,282
Story	8	3	893	8	1,030	6,120
Tama	3	------	185	3	218	1,590
Taylor	1	------	1,300	1	1,323	7,900
Union	1	1	230	1	245	1,400
Van Buren	------	------	------	------	------	------
Wapello	1	1	580	1	580	4,060
Warren	------	------	------	------	------	------
Washington	1	1	190	1	190	1,330
Wayne	1	1	1,900	1	1,900	9,500
Webster	1	1	500	1	900	5,400
Winnebago	7	------	950	7	1,393	11,243
Winneshiek	10	------	1,788	11	2,457	17,604
Woodbury	2	2	9,188	2	9,438	53,248
Worth	9	1	911	9	987	7,362
Wright	6	4	944	6	952	6,158
Total	430	100	87,141	479	105,121	714,639

PART X

EXTRACTS FROM

STATE VETERINARY SURGEON'S REPORT OF 1910

SEVENTH BIENNIAL REPORT

PAUL O. KOTO, State Veterinary Surgeon

INTRODUCTION.

Complying with the statutes relating to this department I submit herewith the Seventh Biennial Report covering the work done during the two years previous to June 30, 1910.

During the time stated much work has been accomplished toward the elimination of diseases of live stock throughout the state, although the department has been hampered by a lack of sufficient funds with which to promote the work which has been outlined.

Serious outbreaks of anthrax have occurred, notably in Woodbury county, which have demanded and received close and careful attention. This disease originated from stock shipped in from neighboring states. This illustrates the need of proper safeguards against infection through interstate traffic in live stock. The laws of Iowa covering this point are entirely inadequate, and should receive the attention of the legislature at its next session. Cattle are constantly being shipped in without due precautions being observed to protect the live stock interests of Iowa against infectious diseases. Enormous losses are annually sustained by stock raisers of Iowa through this source. Much of the loss occasioned by the condemnation of diseased stock is the direct outgrowth of laxity in the oversight of the importation of stock. Stringent regulations of these shipments would result in vast savings to the stock raisers of the state, and insure greater immunity from diseases whose ravages present serious problems to the live stock interests.

Several cases of glanders developed near Cartersville, and elsewhere, which are treated at greater length in another portion of this report.

Additional legislation relating to the shipment into the state of live stock is needed covering points not already included in the statutes. The present law merely requires a health certificate for the importation of registered dairy and breeding cattle and those eligible to registration. Stock not registered passes into the state with impunity, regardless of the condition of health in which they may be found. There is practically no restriction to the shipment into the state of horses, cattle (other than as mentioned), mules, asses, hogs and sheep. The law enacted in a number of states is recommended, such as that in force in Minnesota and other states. These laws require health certificates, in duplicate, one copy to accompany the way bill and one copy to be sent the authorities of the state to which shipment is destined. A certificate of health should be issued for all import shipments of live stock, including a record of the tuberculin test for all cattle intended for dairy or breeding purposes, and a record of the mallein test on horse stock, such certificate to be issued or approved by the authority in control of diseases of live stock in the state from which the shipment originates. This department is laboring under unnecessary handicap so long as these legal restrictions are not furnished. It is like pouring water into a bucket, the bottom of which is missing. It is evident that our efforts to stamp out disease among stock loses much of its value so long as no bars are raised to keep out infection from other states.

One notable case of tubercular infection was found in an interstate shipment of cattle near Waukon, Iowa, where seventeen registered Angus bulls had been purchased from a herd near Canton, Minn., and sold at auction near Waukon, Iowa. The herd was placed in quarantine on the day of sale, and tested with tuberculin. Eleven out of the seventeen reacted to the test, and were shipped to Cedar Rapids for immediate slaughter, subject to federal inspection.

The post mortem revealed tubercular lesions in all of the animals. That these animals were infected is further demonstrated by the fact that the herd from which they were sold was tested by the State Veterinarian of Minnesota about this time, and of the fifty-five head constituting the herd, nineteen reacted.

These diseased animals were sold to eleven different farmers in Iowa for the purpose of building up their herds, and had it not been for the intervention of this department, the disease would have been spread broadcast, infecting the herds of the unsuspecting purchasers.

In this case, our present laws covering the importation of registered cattle, or cattle eligible to registry, enabled us to protect ourselves from infection, while many similar shipments of grade cattle coming into this state are allowed to enter without inspection, and are undoubtedly as great a menace to the live stock interests of this state as the herd above mentioned would have been had there been no restriction against their importation.

The campaign against tuberculosis has been waged with sustained vigor. Owing to the activity of the department in bringing to light a great number of cases of infection, the extent of the disease might appear to be increasing. However, it is safe to assume that the disease was prevalent in a great many places from which it had not been reported prior to the recent increased efforts toward its eradication.

The application of the tuberculin test has become general. This subject is treated somewhat exhaustively in another portion of this report.

Our efforts toward the eradication of tuberculosis has met with much opposition among those whose support we would naturally expect. Many of the prominent stock raisers and public officials have placed their own immediate personal interests in opposition to the public welfare. Consent has been withheld against the application of the tubtreulin test to herds from which diseased animals have knowingly been sold to unsuspecting and innocent purchasers. Such recognition as we have finally been able to obtain, has been secured only by the greatest persistence and persuasion. We are pleased to be able to report, however, that this opposition is diminishing, and we are gaining a readier access to suspected herds throughout the state.

There is a matter to which I desire to call your attention which demands consideration in order that the work of this department may be fully effective. The law of the state provides for reinbursement to owners on account of stock condemned because of being infected with contagious diseases in an amount not exceeding $25 per head for cattle, based on their appraised value. No appropriation has been made with which to carry out this provision, and hence it must of necessity remain a dead letter upon the statute books. The state veterinarian cannot assume the responsibility of destroying condemned stock without being in position to assure the owners of the compensation contemplated by the law. People are loath, if not positively opposed, to permitting the killing of diseased stock of which they are the owners unless they can be remunerated in some measure for the loss involved, often failing to realize the danger incurred by permitting infected animals to continue to exist.

Such animals are a menace to the health of the stock and people with which they may come in contact, in many instances. It is hoped that the requisite appropriation may be made at the forthcoming session of the legislature. The cost of establishing this system of disposing of tuberculous cattle is not as great as is generally supposed. Owners should receive fair remuneration for stock destroyed on account of disease and in case of food animals, should be allowed the alternative of accepting the appraised value of what they will bring for food purposes at a packing house where federal inspection is maintained. The price obtained from the packing house depends on the condition in which the animals are found upon slaughter. In many cases the animals are not badly affected and the greater part of the carcass is passed for food, the owner receiving a fair price for such animals; but in case the animal is badly affected, it is condemned for offal. Hence animals slaughtered at a packing house in many cases net a sum in excess of the appraised figures. But even though in the total the returns from the sale of these animals does not equal the sums paid to the owners upon the appraisement, the balance will not be very great and the benefits to be derived far exceed the expenditure.

Compensation for animals which may be slaughtered on account of communicable disease is provided for in about twenty-five states. In some the compensation is dependent upon the length of time the animal has been in the state, the disease for which it has been slaughtered, and the compliance of the owner with sanitary measures required. Where no compensation is allowed, food animals are in some instances slaughtered subject to the United States meat inspection regulations. This is the case in Nebraska, North Dakota and Utah, and in other states. Compensation is provided in the following named states:

Connecticut, Florida, Illinois, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New

Jersey, New Mexico, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, West Virginia, Wisconsin and Wyoming.

The organization of this department has been perfected so far as the limited appropriation will permit, and able and faithful assistants have rendered valuable aid in promoting the interests with which the department is associated. Competent men throughout the state have responded promptly and efficiently to the various emergencies demanding their attention which have arisen during the last period. Sudden outbreaks of disease among stock must be met intelligently and promptly, and the necessary precaution taken to preclude serious and widespread injury and loss. The welfare of stock raisers demands reliable inspection and the enactment and enforcement of such laws as may be necessary to protect them against infection and dissemination of diseases of stock. The losses traceable to preventable diseases where insufficient regulation has prevailed so far exceeds the entire cost of this department that there is no comparison. That economy which seeks to cut down and circumscribe unduly the resources of this or similar departments is repudiated by the results, and is contrary to good business judgment and foresight. The appropriation of this state is far below that of adjoining states for similar departments. The department will be conducted to its highest efficiency possible with the available funds, but better results could be derived from a substantial increase of the appropriation. Proportionately the results would be more satisfactory and tangible. An examination of the work of the department will disclose the fact that more has been accomplished in proportion to the expenditure than was intended or expected. But much additional remains to be done, and in order to bring this department up to its greatest efficiency, and to the place to which its importance entitles it, an increased appropriation is imperative.

According to the latest available reports there are in the United States about 71,000,000 head of cattle, about 23,000,000 of which are dairy cows. There are in the United States approximately 24,000,000 head of horses, 4,000,000 mules, 58,000,000 sheep and 50,000,000 swine. There are in the state of Iowa about 1,500,000 head of horses valued at about $174,000,000. In this state there are about 47,000 mules, valued at about $5,700,000. Iowa has about 1,570,000 milch cows valued at about $57,000,000; and there are in the state about 3,600,000 head of other cattle, valued at nearly $80,200,000. In this state there are about 750,000 sheep, valued at about $4,000,000; and about 6,500,000 head of swine, valued at about $74,000,000.

It is estimated that 9¼ per cent of all milch cows, 1 per cent of all other cattle, and 2 per cent of all swine are lost from tuberculosis. Among milch cows the loss would amount to 145,225 head valued at $5,272,500; among other cattle 360,000 head, valued at $802,000; among hogs 130,000 head, valued at $1,480,000, making a total loss from tuberculosis of 2,060,000 head, valued at $7,554,500 in the state of Iowa.

These colossal figures enable us to form some idea of the significance of the work of this bureau which seeks to protect this vast number of domestic animals from infection and disease. It will be evident that at best we can only check and control disease among such numbers, but in the case of epidemics and diseases generally prevalent, that is of great importance. It will be evident also that in order to do even a moderate amount of inspection and regulation, the department must be placed upon a firmer foundation and given a substantial support. We again call attention to the large appropriations made by adjoining states for this work, notably in Minesota where the work has reached a high grade of efficiency, and where the appropriation is approximately eight times that of Iowa, and where the results secured more than compensate for the expenditure. In fact, there can be no comparison between actual savings in dollars and cents to stock owners from this source, and the state appropriations made for this work.

The establishment of such a department as this is liable to prompt the thought that it is a luxury which affords no tangible returns for the money invested. This view of the matter is dispelled by an examination of the many instances of actual savings to stockmen and farmers, and the protection which prevents losses from epidemics running into thousands. An instance may be mentioned where a man near Emerson purchased a cow in Nebraska, a registered animal. Through the efforts of this department it was discovered that the animal was infected with tuberculosis. Measures were taken which resulted in the return of the purchase price, together with costs, amounting altogether to a sum of about $600. Directly, as in this and similar cases, as well as indirectly in curbing the spread of infection, this department is annually instrumental in accomplishing great savings to the state at large and to individual stock growers and farmers.

Hog cholera prevails in certain sections of the state from time to time. We have now established our own serum plant, and are in a position to meet this problem more effectively than we formerly could. Gratifying results have followed the establishment of this plant, and it is hoped that future difficulties along this line will not equal those of the past. However, cost of maintaining the plant and other expenses connected with this division of our work necessitates an increased allowance, and a larger appropriation for this purpose is simply a necessity to the continuation of the work. The hog industry in Iowa is one which has made the state famous throughout the world, and its magnitude fully entitles it to a liberal support from the state to which it contributes such magnificent revenues. A glance at the statistics bearing on the subject is sufficient to enable any one to form some measureable conception of the size of this industry. In fact, the live stock industry generally is of such vast proportions that it is absolutely unjust to fail to throw over it the protection afforded by a well-supported live stock sanitation bureau, such as this department might be made to supply.

Co-operating with the Bureau of Animal Industry at Washington, D. C., this department is enabled to secure information relative to the locality and extent of stock diseases throughout the entire country. This information is valuable in guarding against infection through the importation of diseased stock, and in providing necessary safeguards against infection. This state also is given the benefit of experiments and observations of government experts in the Department of Agriculture, all of which tends to the betterment of sanitary measures instituted for the protection of live stock in Iowa.

The State Veterinary Surgeon has responded to calls from gatherings of stockmen and farmers, Farmers' Institutes and the like, for talks and papers on topics relating to the work of this department. He has used lantern slides and other materials illustrating specific cases which have come under his observation and treatment. However, his official duties have not permitted very extensive labor in this important field. Educational work along these lines is of great importance toward securing that interest and co-operation among farmers and stock growers that is essential in order to make effective the measures which are undertaken from time to time to control and eradicate infectious diseases among live stock. Sanitary measures always depend largely for their effectiveness upon the intelligent assistance of the people. The application of measures of disinfection and sanitation is necessary if they are to be of value, and their application is a matter of continued attention, rather than a spasmodic and irregular affair. It therefore depends to a considerable extent upon the fidelity of those who have the actual application in charge, after the instructions have been given. General rules and regulations are furnished localities according to which the department desires any particular situation to be handled. The resources at our command do not permit of close or long continued observation of each individual case, and therefore, after having given the necessary instructions the matter must be left in the hands of others for further attention. For these reasons general discussions and readings along this line are of much importance to the live stock industry of Iowa.

TUBERCULOSIS.

No other disease named in the catalogue of human ills has attained the prominence in recent years that is accorded tuberculosis. It has spread with alarming rapidity, owing chiefly to the multiplying points of contact with humanity in general, which afford the opportunities required by an infectious disease for its dissemination.

Prior to the demonstration of its infectiousness by Villemin in 1865 and the discovery of its specific etiology as of parasitic origin by Koch in 1882, very little of value has been learned respecting the nature and cure of tuberculosis. The extensive ravages of the disease have in recent years forced the question of checking it into prominence and made it one of the leading sanitary problems of the times. It is estimated that more than five million human lives are annually destroyed by this plague.

But this report deals primarily with tuberculosis as it is manifested among live stock—cattle and hogs. It is with this phase of the subject that our department has labored during the past period although indirectly at least, its efforts bear upon the question of public health. While it is true that the bacilli producing tuberculosis in all animals are not identical, as originally believed, yet the transmissibility of bovine tuberculosis to the human, especially to children, has been fully demonstrated. The literature on this subject contains record of more than fifty cases in which the bovine type of tubercle bacilli have been found in infants and children. Some of these were fatal, though not all of them. Several cases of direct, accidental inoculation from cattle to man, have been reported.

Some authorities hold that not more than 1 per cent of the cases reported will show bovine bacilli, and that in individuals more than twelve years of age they will be found only very rarely. These facts, however, by no means minimize the importance of protecting children using cows' milk from the dangers which lurk in this almost indispensable liquid food. Children are the principal users of milk as a drink, and the fact that they are chiefly susceptible to the bovine type of tuberculosis, enhances the seriousness of the problem which confronts us. According to a recent report of the Secretary of Agriculture at Washington, D. C., the proportion of tuberculous cows among those tested which supplied milk to cities, was about 13 per cent. This signifies that the use of unsterilized milk by children involves a considerable risk of taking into the digestive tract the bacilli of tuberculosis, with the liability to infection.

In one of the larger cities of Iowa a philanthropic association undertook to pursue a plan for the investigation of the extent of tuberculosis among children. Up to a certain stage in the campaign, at which time a report was made, six out of every ten examined were found to have incipient symptoms, while others had the disease in a progressive form. Open air sanitariums were established and encouraging results followed.

The fact that the evidences of tuberculosis that may exist in milk or meats cannot be detected save by those who have special qualifications, places the consumer in a peculiarly helpless position, and emphasizes the importance of having cattle tested by capable and trained men, competent to ascertain whether or not infection is present. The cost of the tuberculin test is by no means prohibitive, and while considerable loss is involved in the condemnation of diseased stock and the sacrifice of the animals thus affected, yet it is economy in the end. No one fully realizing the risk he is taking by retaining tuberculous cattle, save those with mild forms of the disease and those under rigid care and isolation, will hesitate about taking necessary steps to protect himself and the public that may be exposed to infection through the purchase of milk or meat from his stock.

The diagnosis of tuberculosis in cattle presents no alternative save the use of tuberculin, it being recognized by the leading authorities of this and foreign countries that the positive diagnosis of tuberculosis in most living animals is impossible without the use of tuberculin.

Tuberculin is the boullion in which the tubercle bacillus has been grown, charged with the toxic products of its growth, but which has been raised to boiling temperature to destroy all germ life, and from which the dead germs have been removed by passing through a porcelain filter. When a physiological dose of this has been injected, subcutum, into the suspected animal, it has no effect upon the non-tuberculous, while in the tuberculous it produces, in the course of the next twenty-four hours (usually from the eighth to the sixteenth), a steady rise of temperature by 2 degrees F. or more, followed by a slow subsidence to the normal. This may last for from three to ten hours in different cases. . .

The following precautions should be observed:

1. The temperature of the animal is best taken at intervals, or at least morning, noon and night, on the day of injection to show that the animal has no habitual rise at any time of the day.

2. The subject must be in good general health. If there is present in the system any concurrent disease it may undergo an aggravation within twenty-four hours and give a rise of temperature that will be mistakenly set down for tuberculosis. At the very start, therefore, it is important that the general health of the animal should be first assured by a critical professional examination. If some other disease is present the Tuberculin test had best, as a rule, be delayed until that has subsided, while if tuberculosis be found the test will be superfluous.

3. The cows should not be tested while in advanced pregnancy or about to abort. In many cases, though not in all, as preparations are made for calving, the system becomes unduly susceptible to the presence of tuberculin and that agent will cause a rise of temperature, although no tuberculosis is present. Unless this source of error is carefully guarded against, the most valuable cows in the herd may be condemned unjustly.

4. The cow must not be within three days of the period at which "heat" would naturally occur. Under the excitement of oestrum the body temperature usually rises from two to three degress, and if tuberculin has been used this rise may be attributed to tuberculosis and a sound animal may be condemned. Abortions sometimes take place unexpectedly and unknown to the owner. If, therefore, a cow under the test, and which is not advanced in pregnancy, should show a rise of temperature, it should at once be ascertained whether or not the animal is in "heat." If symptoms of "heat" are found she should be set aside along with any calving cows to be tested again when such source of error is no longer present.

5. The tested animal should not be exposed to hot sun in a closed area. In excess this will produce heat apoplexy, and the fever heat which ushers this in may easily be mistaken for the indications of tuberculosis.

6. Cattle taken from pastures must not be enclosed in hot, stuffy stables. While they must be tied up to allow of the temperature being taken at intervals, coolness and ventilation should be secured in summer by a sufficient air space and the requisite ventilating openings.

7. Exposure to cold draughts between open doors and windows or to wet or chilly blasts out of doors should be carefully guarded against. A chill proceeding from any source and alike in the presence or absence of tuberculin causes a rise in the internal body temperature.

8. Heavy cows unaccustomed to stand on hard boards may have a rise of temperature in connection with resulting tenderness of feet. One must avoid hard floors on the day of the test, or make examination of feet and allow for attendant fever.

9. Ommission of the previous milking or a change of milker and consequent retention of part of the milk will raise the temperature of a nervous cow, and in careless hands secure an erroneous condemnation.

10. Change of food is liable to produce a slight indigestion and rise of temperature. This should be avoided as far as possible, and when the herd is taken from the pasture for the test, it should have grass, ensilage or other succulent food.

11. Cattle just arriving from a long trip by road or rail, or other causes of violent exertion are liable to have an elevated temperature from the leukomain poisoning. Such should be left at rest until the transient fever shall have subsided.

12. Violent handling of nervous cows in taking the temperature must be carefully avoided. The operator who cannot handle them gently is not fit for the work.

13. There must be evidence that the animals have not been repeatedly tested at brief intervals shortly before. In a number of instances we have found a proportion of the cattle unresponsive to tuberculin, though a post mortem proved the presence of tuberculosis. Unscrupulous men, wishing to sell on a guarantee, can avail of this in animals unaffected by the test.

14. The operator must have absolute control, even of the feeding and watering of the animals on the days of testing. Otherwise the rise of temperature may be prevented by a liberal use of antipyretics and a false guarantee may be secured.

15. An unthrifty animal, having general symptoms suggesting tuberculosis, must be subjected to the most critical examination in addition to the tuberculin which in such animals often fails to cause hyperthermia. Fortunately in such animals the tubercles are usually numerous and extensive enough to be discovered through objective symptoms.

16. Animals excluded from the test by reason of some individual unfitness at the time (parturition, oestrum, abortion or any other dis-

ease) may be marked and held for the test later after such disqualification shall have passed.

17. The operator must bear in mind the possibility of transferring other diseases from animal to animal by contact, by the use of hypodermic needle on two in succession, and above all by the clinical thermometer. Diseases like contagious abortion, which present no obvious symptoms in the intervals, are especially liable to be carried in this way, and instances of the active extension of this after a test, have come under my notice. The operator should always inquire carefully as to the existence of abortions and sterility in the herd, put the aborting animals by themselves, using a special thermometer upon them, and carefully washing the hands before going to other animals. It is well further to clean the thermometer after each animal and disinfect it with carbolic acid solution (5:100).

Of the usual American preparation 2cc. (30 drops) is adapted to a cow or ox of 1,000 to 1,200 pounds. For larger or smaller animals a moderate increase or reduction must be made, yet a considerable latitude is allowable.

We recommend the use of tuberculin manufactured by the Bureau of Animal Industry.

Healthy herds should be protected by preventing infected animals from being brought into the herd. Animals exhibiting tuberculous udders and giving evidence of generalized tuberculosis should be eliminated. Prompt tests should be applied, and reacting animals should be at once segregated. The test should be repeated, at intervals, until all infected animals are discovered and removed.

Animals that react to the tuberculin test should be disposed of in one of the following ways: Destruction, slaughter for beef under inspection, or isolation for breeding purposes according to the Bang method. No animal that has reacted to the test should ever be returned to the sound herd, even though subsequently ceasing to react and appearing to be perfectly well. Unless cows can be purchased from perfectly healthy herds, it is inadvisable to continue or establish the practice of selling cows during dry season and buying fresh cows. No cows should be bought for dairy purposes unless they pass the tuberculin test. All new animals, not reacting, should be retested at intervals.

Aside from the public health aspect of the subject, tuberculous cattle entail loss to owners in the following ways: Death from the disease after it has become established; waste in feeding, as diseased stock cannot utilize the full value of foods; heavy loss through infection of other animals, including hogs, vast numbers of which are annually made victims of tuberculosis; reduction in the market value of cattle and hogs, due to evidence of disease; impairing reputation of herd, and handicapping sales from herd in which there is disease.

A word concerning the Bang method of handling tuberculous herds is appropriate at this time. Professor Bang of the Copenhagen (Denmark) Veterinary College, has recommended this method in Denmark, where it has been placed into practice. Its purpose is to replenish a tuberculous herd without entailing unnecessary loss to the owner. It contemplates the destruction of all animals showing physical symptoms of the disease, and the isolation for breeding purposes of animals which react to the test, but which are free from physical symptoms of tuberculosis. They are closely watched, and in case any of them develop such symptoms they are destroyed. Stables are thoroughly disinfected. Infected animals are fattened and killed for beef under inspection as the sound herd has been increased. Calves from infected cows are isolated and fed on pasteurized milk, and as tuberculosis is very rarely congenital, develop into healthy animals in most cases. There is an instance on record, reported by Professor Regner, where 36,149 cattle were tested; 33.6 per cent reacted. After from two to nine years under the Bang method in the different herds the percentage had been reduced to 4.7 per cent. Wisconsin and other states have experimented successfully with this method, and gratifying results have invariably followed. In 1901 the New York Experiment Station introduced the Bang method, as more than half of the herd was found to be tuberculous. Thirteen of the thirty animals belonging to the station were healthy and the remainder were diseased. Twenty-four desirable heifer calves were produced by this herd during the following four years, about half of which came from the tuberculous animals and in 1905 the herd contained thirty healthy animals. Non-reacting animals are tested from time to time, and individuals reacting are placed with the isolated herd. Calves raised from reacting animals that fail to respond to the test are placed with the sound herd. Observation shows that only from 1 to 6 per cent of calves raised under these conditions have reacted to tuberculin at six months of age. The Bang method has been employed with remarkable success in Hungary, where many highly infected herds have been freed from the disease in from four to six years. The chief value of the Bang method lies in the fact that through this means animals in the advanced stages of tuberculosis may be destroyed without taking away the benefits that may still be derived from the balance of the herd.

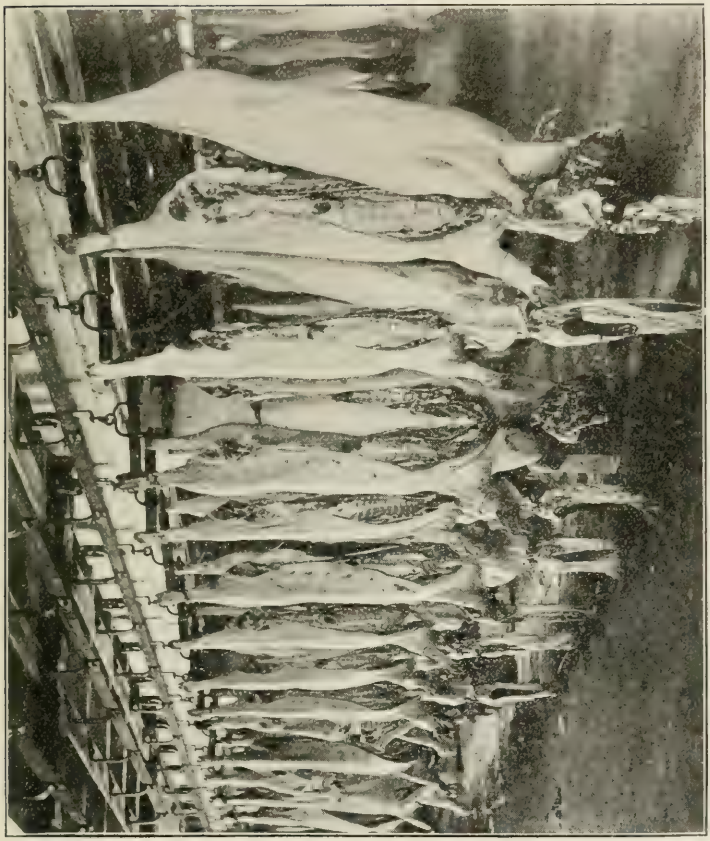
One fruitful source of infection is skimmed milk from creameries. The enactment of a law in Iowa, in accordance with the recommendations of this department, prohibiting the sale or transportation of skim milk from creameries and elsewhere without pasteurization, has protected patrons of Iowa creameries from this source of danger. Hogs are regularly infected through the feeding of skim milk containing bacilli. Hogs are highly susceptible to infection, and, while the life of the hog is shorter and the elimination of the disease through the replenishing of the herd more practicable, enormous losses are brought about through tubercular infection of hogs.

The accompanying cut shows a number of hogs found to be tubercular on slaughter and upon investigation it was found that they had been pastured with tubercular cattle.

The two most fruitful sources of infection is the introduction into the herd of infected animals, and the feeding of milk containing tubercular bacilli. Guard these avenues well, and you will be comparatively safe, provided proper sanitary measures are taken, and no infection already exists in the herd. Every animal introduced into the herd should be submitted to the tuberculin test, and all milk secured from sources not known to be free from infection should be pasteurized.

According to the report of the United States Bureau of Animal Industry, there is a general prevalence of tuberculosis among cattle throughout the country. To undertake its eradication summarily would be a hopeless task. The report mentioned sets forth a plan of small quarantine areas in localities where the disease is unusually prevalent, allowing cattle and hogs to be shipped out only when tagged for identification. It is hoped that in this way the information reported back to the localities from which the infected animals have been shipped will enable such localities to stamp out the disease, and the area may be gradually extended from time to time as the work progresses.

Much experimentation has been under way recently with a view toward the discovery of a vaccine for the immunization of cattle against tuberculosis, but as yet the method is impracticable, although hopes are entertained for its ultimate perfection to a point where it will be adapted to the conditions that prevail.

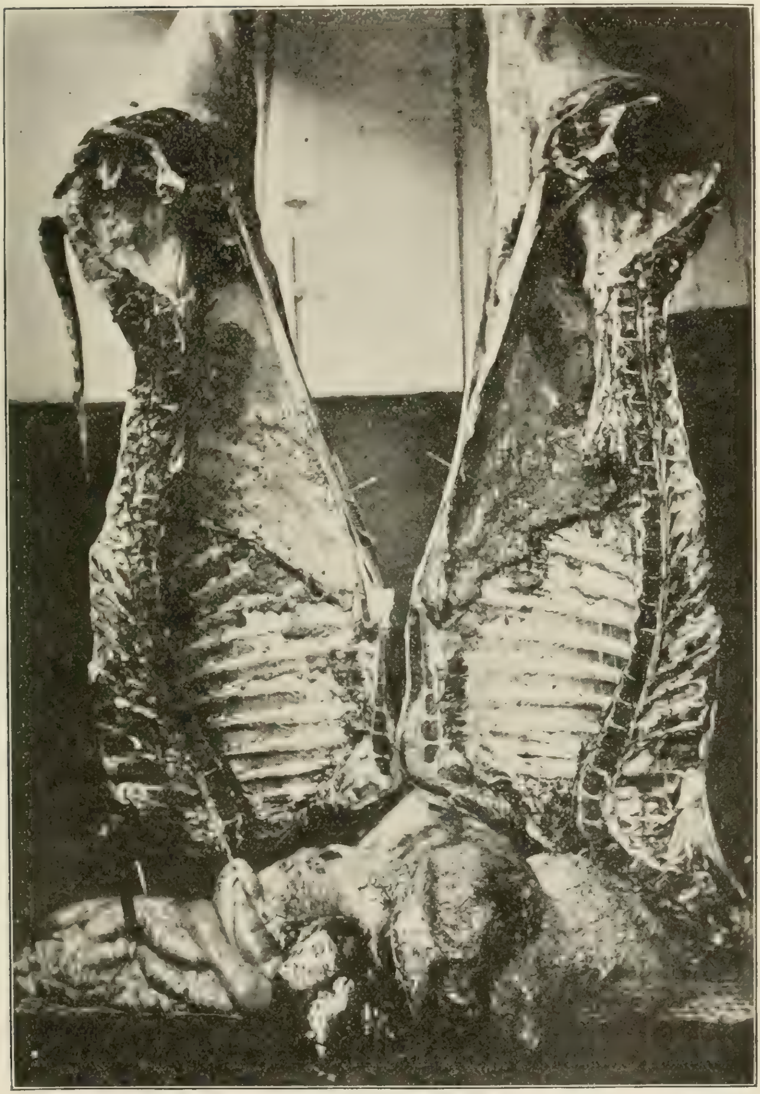


No. 1. HOGS INFECTED BY FOLLOWING TUBERCULAR CATTLE

Bovovaccine by what it known as the Von Behring method is therefore in the experimental stage, so far as practical results are concerned, although some good breeders have tried it with satisfactory results. Mr. R. B. Young, of Buffalo Center, vaccinated thirty animals. None reacted to the tuberculin test. These were calves of pure bred cows, some of which had reacted to the tuberculin test, and had been allowed to mingle with the diseased animals. Von Behring has obtained a product known as tulose from tubercle bacteria, with which he has succeeded in immunizing against living tubercle organisms. This method is known as Mithridatization. He holds that a passive immunity may be obtained from the use of serums. The principal value of immunization lies in making it possible by saving the calves to build up a sound herd from tuberculous stock.

Considerable attention has been given to the herds at the various state institutions. The appended report sheet will show the tests and the variation in the results growing out of a number of successive tests in some instances. With some few exceptions, the successive tests show a diminution of the extent of infection, and the eradication of the disease under the preventive and sanitary measures enforced. The tests were not made uniformly at all the state institutions, but were made at different times and at unequal intervals.

The state herd at Independence was tested by this department on May 28, 1909. The herd then numbered eighty-nine, out of which number fifty-one reacted. An addition of forty-four head had been made to the state herd since the preceding test, which had been bought in Binghamton, N. Y. Of these animals twenty-three reacted in the test mentioned. The attached post mortem sheet discloses the condition of the individual animals, as they were slaughtered at the packing plant. Again in December, 1909, the herd, then numbering fifty-four head, was tested, and six found to react with two suspicious. Post mortem record of these eight animals is appended to this report. The herd, forty-three in number, was once more tested in May, 1910, and no reactors found. It is therefore assumed that the disease had been stamped out in this institution, though stringent precautions are being observed to prevent a re-infection. This condition is gratifying in view of the fact that in the test made as reported in the Sixth Biennial Report of this department, when the state herd consisted of one hundred and seventy-six animals, one hundred and



No. 2. CASE OF ADVANCED TUBERCULOSUS,-FROM INDEPENDENCE HERD

twenty-nine reacted. The eradication of the disease has been accomplished by relying upon the tuberculin test, and basing our action wholly upon its results. The one hundred and twenty-nine reacting in the test just referred to, all showed pronounced lesions at the post mortem examination. Of the fifty-one reacting in May, 1909, fifty were slaughtered at the T. M. Sinclair packing plant in Cedar Rapids on June 9th. Four of these were found to be so badly infected that they were consigned to the fertilizing tank. Two of them, specimens from which are shown in accompanying illustrations, were extreme cases. The remaining forty-six were used for beef, seven of them showing no visible lesions, undoubtedly due to recent infection; this number including some suspicious animals. The four consigned to the tank were all of the herd purchased in New York. It is evident that the disease was brought in by this New York shipment. It is believed that animals from this same shipment were sent to the state institutions at Mount Pleasant, Glenwood, Clarinda and Eldora. Prior to the receipt at the institutions named, of the animals referred to, tests of the state herds disclosed the presence of no tuberculous animals. Subsequent tests after the arrival of the New York cattle showed marked infection. Furthermore, the animals slaughtered from the Independence herd, out of the New York shipment, showed such advanced stages of the disease that they must have been infected prior to their arrival at Independence. Those of the condemned animals showing the most advanced lesions were from the New York shipment. These considerations overrule the suggestion that the imported animals might have become infected after reaching Independence.

FINAL POST-MORTEM EXAMINATIONS.

INDEPENDENCE HERD, DECEMBER 10, 1909.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Prescapular	Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric				Food	Tallow	Offal
3929	+												
4127							+						
4857		+	+	+						†			
4387		*											
4980	+	+	+				+						
4698		+	+										
3857			+										
3587										‡			+

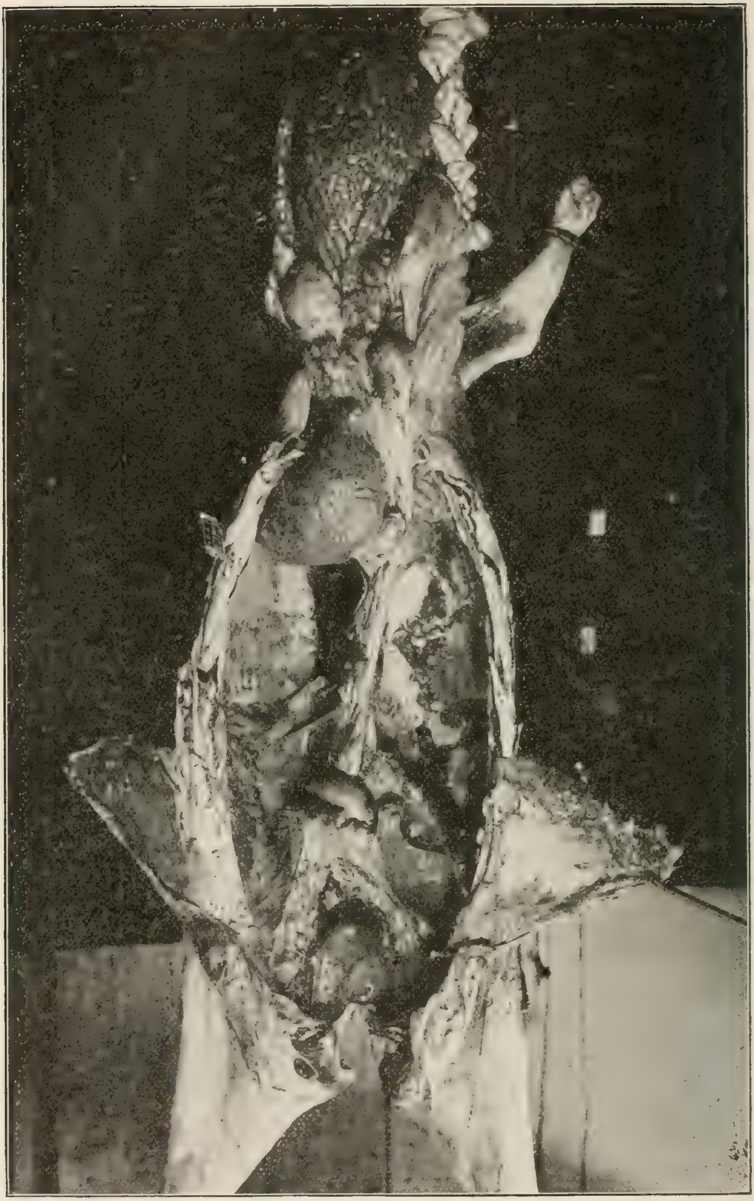
* Susp.
† Normal.
‡ Generalized.

FINAL POST-MORTEM EXAMINATIONS.

INDEPENDENCE HERD, JUNE 8, 1909.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Prescapuiar	Disposition		
	Cervical	Bronchial	Medias-tinal			Portal	Mesenteric				Food	Tallow	Offal
2257		+	+										
2253			+										
2254		+											
2144				+									
2436		+					+	+					
2005		+											
2371		+	+	+				+					
2494		*											
2450		†											
2239		‡											
2161			+										
2447			+										
2114		+	+					+					
2334	†												
2478		†											
2317							+						
2214	+												
2362		§											
2014		†											
2196	+												
2176		†											
2212		+	+										
2477		+	+				+						
2464							+						
2462	+												
2469							+						
2207			+										
2162			+										
2078		+	+										
2450		+	+	+									
2149		+	+	+						+			
2361		+	+	+			+				+		+
2380		+											
2476		†											
2107		+											
——							+	+					
2059		+	+	+									
2324		†											
2216	+												
2158		+	+										
2267		+	+										
2452	+	+					+						
2076	+	+	+										
2174							+						
2135	+												
2119	+	+		+			+						
2327		+	+	+									
2086		+	+										
2121	+												
2079	+	+	+			+	+	+					
2389	+												

*Generalized **(cut No. 1.)**
†Normal.
‡Generalized.
§Generalized (cut No. 2.)



No. 3. CASE OF ADVANCED TUBERCULOSIS, FROM INDEPENDENCE HERD

The herd at the State Sanatorium for the treatment of tuberculosis at Oakdale, was examined in July, 1909. The herd consisted of fifty-three head, of which nine reacted to the test and two were held as suspicious; the former year there being but one reactor in the herd which then numbered thirty-three head. Shortly prior to the test in July, 1909, a herd of twenty-five Holsteins had been purchased in Illinois, and the nine reactors were all from this herd. The two suspects had associated with this herd and were evidently infected directly from this source. Another test was made in November, 1909, and again in May, 1910, there being no reactors or suspects found on either of these tests, and it is hoped the herd will remain healthy.

The nine reactors and two suspects were slaughtered and found to be in the conditions disclosed by accompanying post mortem record.

FINAL POST-MORTEM EXAMINATIONS.

OAKDALE HERD, IOWA CITY, JULY 21, 1909.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Prescapular	Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric				Food	Tallow	Offal
50-6			+										
20-2		+	+	+		+	+	+					*
44-10		+				†							
27-3						+		+					
36-7		‡											
35-5			+										
46-11							+						
37-8	+	+	+				+						
30-4		+	+										
42-9		+	+										
15-1		+	+	+				+	§				

*Tank.
†Suspect.
‡Superficial.
§Large abscess.

The test at the Industrial School at Eldora in May, 1909, disclosed the fact that out of the herd of eighty-two animals four reacted. An examination in the previous year, when the herd numbered sixty-three, showed no reactors. The attached post mortem record shows the extent of the disease in the four cases which were found at the institution. The four cases in question were found in a herd of Holsteins which had been purchased in Illinois previous to the test. This shows the danger of infection from the importation of cattle without proper safeguards. The four reactors were kept in quarantine for four months and then retested, all of them again showing a reaction, and in October, 1909, they were slaughtered at the Brittan & Company Packing plant at Marshalltown, showing marked lesions, two of them being condemned for offal.

The accompanying cuts show these animals to be in apparently good condition, which fact tends to support the theory that it is impossible to positively diagnose tuberculosis without the aid of tuberculin.

FINAL POST-MORTEM EXAMINATIONS.

INDUSTRIAL SCHOOL, ELDORA, IOWA, OCTOBER 13, 1909.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Prescapular	Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric				Food	Tallow	Offal
2416		+	+		+	+		+		*			+
2259		+	+										
2240	+	+	+	+			+						+
2078	+												

*Prescapular.

It is discouraging to endeavor to keep a clean herd when infection can be introduced without restraint by the importation of animals from other states. In this instance it was supposed that due care had been exercised to secure heathly cattle. Nevertheless it was found that the very cattle which were intended to build up the herd proved to be the means of infecting it.

An examination of the herd in May, 1910, when it numbered seventy-two head showed no infection. It is gratifying to know by the results of the test of May, 1910, that the herd had again gained the same standard of perfection it had claimed prior to the importation of the diseased cattle.

The herd at the Soldiers' Orphans' Home at Davenport has developed serious infection during the past year. The herd was tested in 1908 and found to be free from tuberculosis and when tested in June, 1909, the examination disclosed six reactors and six suspects out of the herd of fifty head. This infection was accounted for by the fact that subsequent to the test of 1908, other cattle had been purchased and brought into the herd from other states. These reacting and suspicious animals were not slaughtered but placed in quarantine, and again other animals were purchased to replenish the herd. A third test was made in January, 1910, when there was found to be twenty-two reactors, and four suspects out of the herd of fifty-four head, this number including animals placed in quarantine after test of June, 1909. Seventeen of these animals were slaughtered with the result as shown on the accompanying post mortem record, the balance remaining in quarantine, these being animals that reacted in 1909. Out of the seventeen that were slaughtered there were two, that on post mortem showed no pronounced lesions, one of these was classed as a suspect at examination. When a fourth test was made of this herd, these quarantined reactors were included but all of them did not show a reaction, so it was decided to send one of them to slaughter with other reacting animals, as a check, and on post mortem same was found to be badly infected. It was then decided to slaughter the remainder that had been in quarantine since the test in June, 1909, with the result that all showed pronounced lesions; the accompanying cut being taken from one of the animals that had failed to respond to the final test. This would tend to show that an animal showing a typical reaction to the tuberculin test should be considered as diseased and does not require subsequent testing.

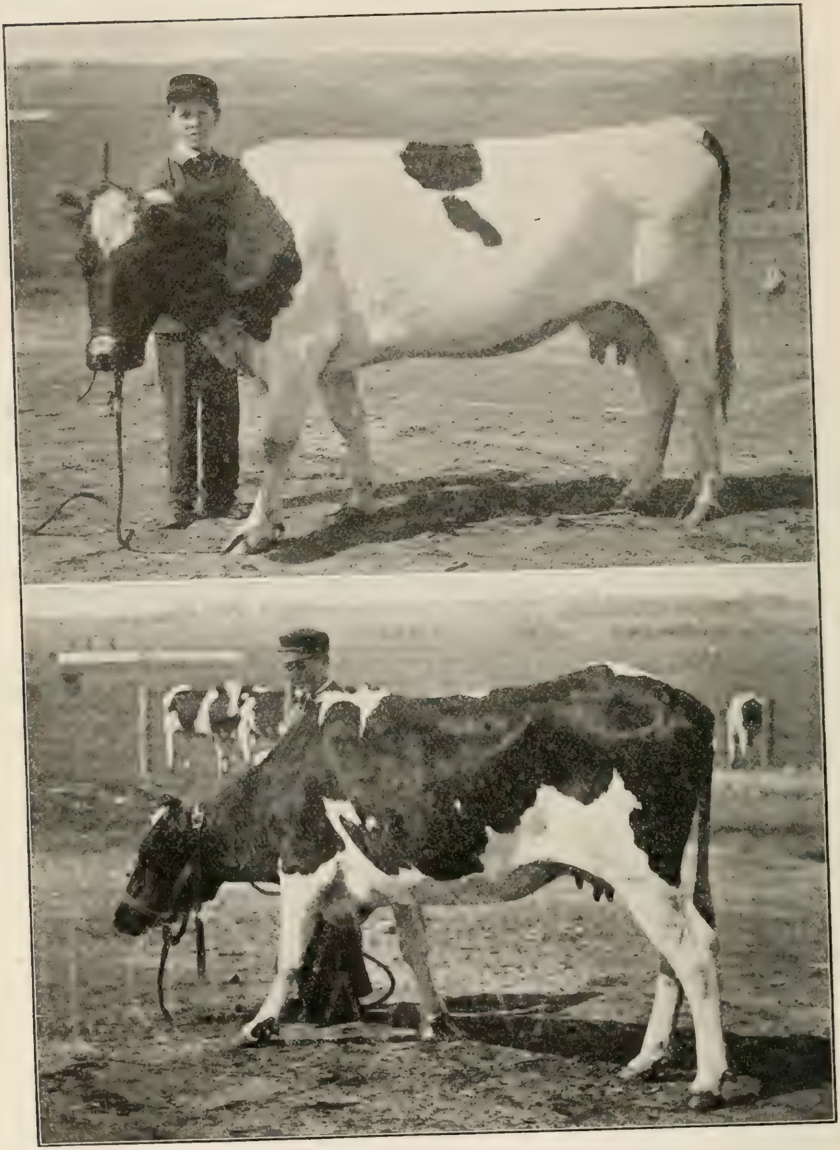
With proper care and precautions, it is thought that the disease will eventually be eradicated from this herd.

FINAL POST-MORTEM EXAMINATIONS.

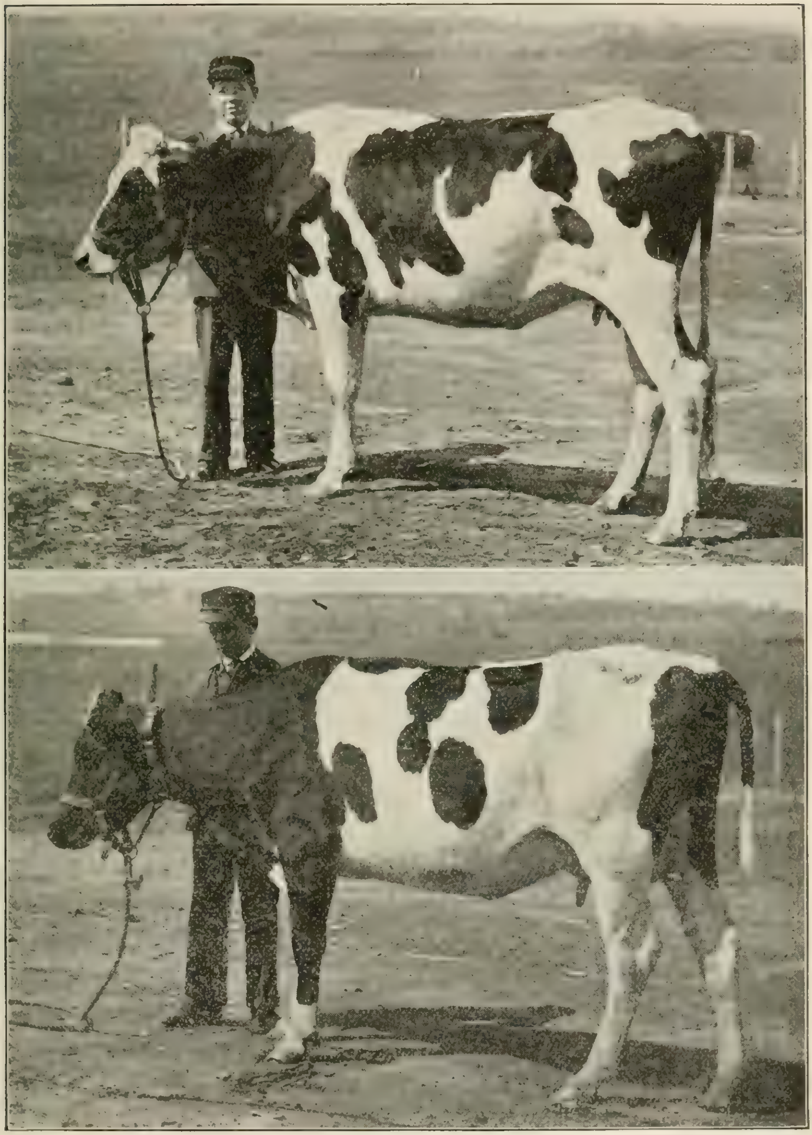
ORPHANS' HOME, DAVENPORT, FEBRUARY 2, 1909.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Prescapular	Disposition		
	Cervical	Bronchial	Medias- tinal			Portal	Mesenteric				Food	Tallow	Offal
3081		+											
4819				+									
3969	+												
4936			+										
3086	*												+
3952	*												+
3245		+	+										
3450		+					+						
3389							+						
3548				+									
4379				+									
3189				+									
4859	*												+
4718	+												
S3938	†												
4319		+											
D4303	†												

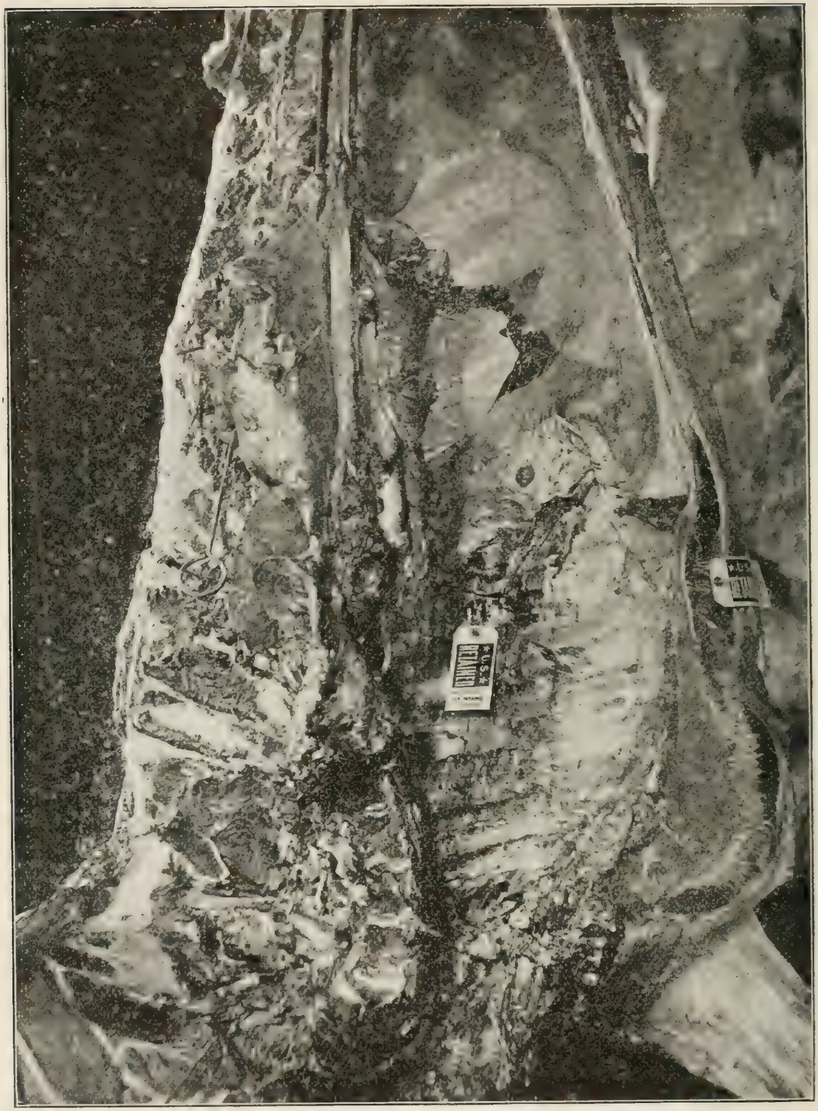
*Generalized tuberculosis.
†Normal.



No. 4 TUBERCULIN REACTORS, FROM ELDORA HERD



No. 5. TUBERCULIN REACTORS, FROM ELDORA HERD



No. 6. TUBERCULAR LESION IN DAVENPORT—REACTOR WHICH FAILED TO REACT TO THIRD TEST

The state herd at Mt. Pleasant was tested on June 2, 1909, at which test twenty-five out of the herd of one hundred and fifty-seven reacted, and eleven proved suspicious. Post mortem report attached shows result of examination at slaughter house of the twenty-five reactors.

FINAL POST-MORTEM EXAMINATIONS.

MT. PLEASANT HERD, JUNE 2, 1909.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Medias-tinal			Portal	Mesenteric				Food	Tallow	Offal
2367										*			
2233		+	+	+									
2179		+	+	+									
2725	+			+									
2229		+	+	+		+						+	
2011		+	+	+									
2164	+												
2136		+	+										
2238	+	+	+	+									
2465		+	+	+				+					
2950								+					
2417		+	+	+		+	+	+					
2410		+	+										
2067		+	+	+				+		†			+
2387								+					
2105	+	+	+	+									
2366		+	+										
2402		+		+									
2155		+						+					
2378	+	+						+					
2426		+											
2404			+				+	+					
2419	+			+			+	+					
2295		+											
2331		+	+	+				+		†			

*Superficial.
†Prescapular.

As a result of another test on December 1, 1909, it was found that forty-six of the herd were infected and nine suspicious. Both reactors and suspects were slaughtered, fifty-five in all, with the result shown.

FINAL POST-MORTEM EXAMINATIONS.

MT. PLEASANT HERD, DECEMBER 8, 1909.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Medias-tinal			Portal	Mesenteric				Food	Tallow	Offal
3855	+	+	+										
4570			+				+						
4217	+		+										
4384		+	+										
4487	+		+	+									
3933			+		+								
3754	+	+											
3955						+							
4431		+		+									
4507			*							**			
3200			+										
4938			+										
3879				+			+						
3443		+	+	+									
S4722						+							
4806		+	+	+			+						
3545	+												
4706		+	+				+						
3346		+					+						
3691		+		+			+						
4692		+					+						
2390		+	+	+									
4868		+				+				†			+
4056		+					+						
S3679		+	†				+	+		†			+
S3314						+		+					+
4748		+											
4346			+	+						§			
4452		+	+	+									
S3922							+						
4838		+											
4719			+	+									
S3116		+											
S4312			+										
4135			+	+									
S4310			+										
4173		+											
3441		+	+			+		+					
4915		+								+			
4600		+								+			
4983		+		+									
3989										**			
3021	+	+											
4500		+	+				+						
3011	+	+		+			+						
4496		+		+			+						
4589			+				+						
4503							+						
3503		+	+	+									
S3210							+						
4833	+												
4391		+	+										
S4461		+	+										
4588		+	+	+									
4532	+	+	+	+			+						

*Right hind leg.
**None.
†Peritonitis.
‡Pleurisy.
§Emaciation.

Again in May, 1910, the herd was tested, showing four reactors and one suspect. The four reactors were slaughtered, wih result as shown.

FINAL POST-MORTEM EXAMINATIONS.

MT. PLEASANT HERD, MAY 20, 1910.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric				Food	Tallow	Offal
3624			+	+									
4767				+						*			+
4454				+									
3611			+	+									

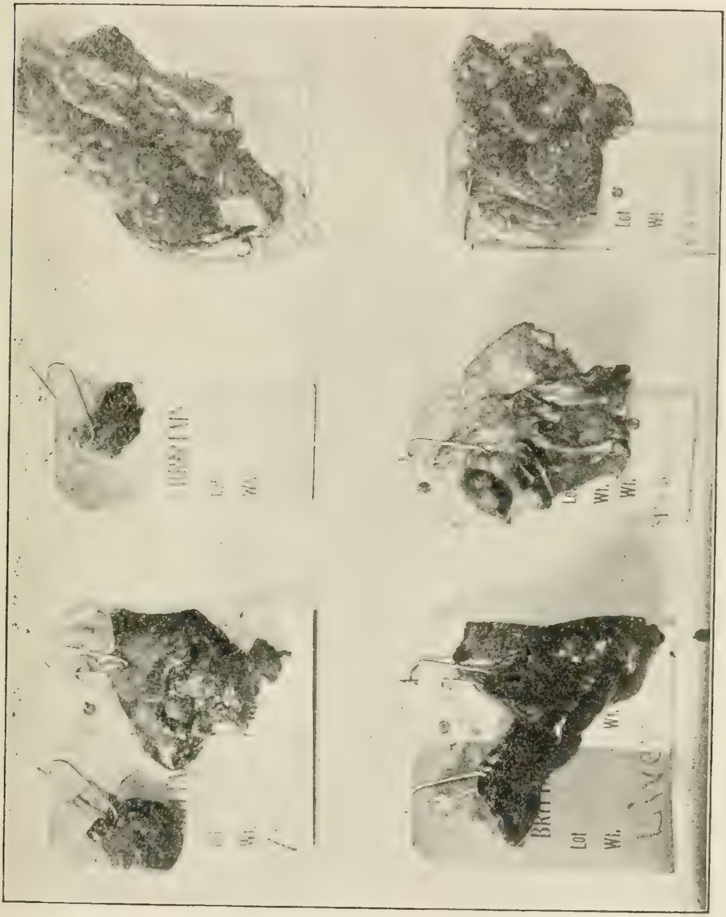
*Generalized.

It will thus be seen that the situation at this institution is or has been serious, and that the tuberculin test has been shown at the inspection to be absolutely reliable as a means of detecting the presence of infection.

Conditions at the institution were not sanitary or favorable at the time of the 1908 examination. Stables and stalls were not in desirable condition. It is believed that these conditions tended to aggravate the disease and extent of infection. Since that time the stalls and stable conditions generally, have been improved.

In January of this year a notable outbreak of tuberculosis was discovered by the United States Department of Agriculture, through the report of meat inspectors at Burlington, which was forwarded to this department for consideration and attention. The federal inspector reported to the Bureau of Animal industry of the Department of Agriculture the slaughter of two cows which had been bought from a dairy herd in Burlington, found to be in an advanced stage of tuberculous infection. The herd from which these cows had been sold supplied the milk for a large number of patrons in the city named. The result of our investigation was a test of the entire herd of twenty-eight animals. Twenty-five of them reacted. The herd was immediately placed under quarantine. The owner was disposed to disbelieve the accuracy of our test on account of the general healthy appearance of his cows, and demanded a retest. It is the attitude of this department that an animal once unmistakably reacting to the tuberculin test is tuberculous and that subsequent tests of the same animal are unnecessary, and unwarranted. However, in view of the insistence of the owner of this herd, it was finally agreed that they should be retested. The owner refused to accept our services in conducting the retest, being determined to have a private non-official test. Our representatives were present at the test, and reported on the proceeding. Of the twenty-five retested, nine reacted and five were regarded as suspicious. This test was not conducted to the satisfaction of the veterinarians representing this department. The results were not regarded as conclusive, and the test repudiated on the ground that the tuberculin used was unreliable, and the amount used insufficient. Furthermore the work was done too hastily, not allowing sufficient time for the development of symptoms. The quarantine regulations have, to some extent, been disregarded in this case, and an attempt made by sympathizers of the dairyman to interfere with the procedure of this department. Our position as to the reliability of the tuberculin test is approved and sanctioned by the Bureau of Animal Industry at Washington. Experience has shown that retests of once infected animals can be of no substantial value, and that its practice, generally as a matter of policy, is unsound in theory and indefensible.

Another case from a private herd, owned by a man who has disparaged the activity of our department in insisting upon thorough tests of animals used for dairy purposes, and for sale to dairymen, was brought to light at Grinnell. A dairy cow purchased in 1909, which was sold as a healthy animal, was tested and reacted. The abnormal temperature was attributed to the food supply and overexertion, and the animal regarded as suitable for dairy purposes. A year later another test was applied to this animal, and a pronounced reaction resulted. The animal was slaughtered as a packing house under federal inspection, and disclosed typical and positive lesions of tuberculosis in the portal, mesenteric, mediastinal, liver, bronchial and prescapular glands. Many of the organs were calcified, indicating that the disease was of long standing. The animal was tanked as unfit for food. The accompanying cut (No. 7) shows portions of diseased organs.



No. 7. TUBERCULAR LESIONS FOUND IN DAIRY COW PURCHASED BY A GRINNELL DAIRYMAN

RESULTS OF TESTS ON STATE HERDS

Postoffice	Number tested	Number reacted	Suspicious	Healthy
Anamosa—				
June 14, 1909	10	--------	--------	10
May 26, 1910	17	--------	--------	17
Cherokee—				
January 1, 1910	136	1	6	129
Clarinda—				
June 5, 1909	134	8	2	124
December 8, 1909	120	--------	2	118
May 27, 1910	95	--------	--------	95
Council Bluffs—				
June 3, 1909	19	--------	--------	19
January 21, 1910	20	--------	--------	20
Davenport—				
June 10, 1909	50	6	6	38
January 26, 1910	54	22	4	28
Eldora—				
May 26, 1909	82	4	--------	78
May 12, 1910	72	--------	--------	72
Fort Madison—				
May 19, 1910	9	--------	--------	9
Glenwood—				
June 2, 1909	118	15	--------	103
December 9, 1909	106	1	--------	105
May 28, 1910	94	1	--------	93
Independence—				
May 28, 1909	89	51	--------	38
December 4, 1909	54	6	2	46
May 19, 1910	43	--------	--------	43
Iowa City (Oakdale Sanatorium)—				
July 16, 1909	53	9	2	42
November 27, 1909	38	--------	--------	38
May 6, 1910	46	--------	--------	46
Knoxville—				
December 23, 1909	20	--------	--------	20
Mitchellville—				
May 4, 1909	26	--------	--------	26
May 13, 1910	27	3	--------	24
Mount Pleasant—				
June 2, 1909	157	25	11	121
December 1, 1909	139	46	9	84
May 18, 1910	91	4	1	86
Marshalltown (dairies supplying Iowa Soldiers' Home)				
Loss & Sons—				
July 7, 1909	20	4	--------	16
October 29, 1909	6	--------	--------	6
April 7, 1910	23	--------	--------	23
Darling & Wilson—				
July 7, 1909	23	--------	--------	23
October 28, 1909	27	--------	1	26
E. E. Howe—				
July 7, 1909	19	6	--------	13
October 29, 1909	5	--------	--------	5
April 7, 1910	18	--------	--------	18
Ed Hewett—				
April 8, 1910	18	--------	--------	18
Vinton—				
June 5, 1909	8	--------	1	7
December 16, 1909	8	--------	1	7
June 15, 1910	7	--------	--------	7

GLANDERS.

Glanders is one of the most dangerous diseases of the horse, as well as one of the oldest. Ancient history deals with its ravages and general characteristics. In the middle ages it was recognized, and horses afflicted with the disease were considered unsound. The knowledge of the disease presents the usual steps of development. While the disease was recognized and known in a general way for centuries, it was not until 1882 that its real nature was discovered. In that year two German bacteriologists, Loeffler and Schuetz, discovered the microbe, called bacilli Mallei, which all now recognize as the cause of glanders.

A tiny rod-shaped bacterium from one to three twenty-five hundredths of an inch in length is the cause of the disease. These rods which are straight with rounded ends or slightly curved, are often found lying in couples side by side. They are easily stained by methylene blue, fuchsine or gentian violet and other dyes. The microbe grows most luxuriently on the blood serum of horses and sheep, or beef broth and sliced potato, though it grows readily on all the ordinary media. It does not multiply in the filth of stables, though experiment has shown that it will remain alive and active in such places for three or four months. It is killed in a week by drying, but will live in putrefying material for two or three weeks. It retains its vigor in water for two or three weeks. Authorities differ as to whether or not the microbe forms spores. Those who deny it this attribute, hold that the resisting power to germicide, which the microbe possesses, would be far greater were it spore-forming. A one to one-thousandth solution of corrosive sublimate will kill the microbe, as will a five per cent solution of either crealin or carbolic acid.

Individual horses are not equally susceptible to the viris of glanders. Like tuberculosis, glanders has certain pre-disposing factors, among them may be mentioned over-exertion, too little food, poor ventilation, chill and disease.

The transmission of glanders may take place directly, or indirectly by means of harness, clothing, pails, stable tools, fodder, litter, grooms, etc. The bacilli of glanders cannot multiply outside the body. In nine-tenths of all cases, the lungs are the gateway of the disease, probably reaching the nasal membranes by being inhaled with the air in form of dust; by reciprocal smelling of other animals, or by deep respiratory movements. The presence of catarrh predisposes the membrane to the penetration of the bacilli. The skin is the second gateway for the entrance of the bacilli. Farcy-formerly regarded as a separate disease, is nothing else than glanders of the skin. As a rule the skin is primarily infected, only when it has been previously injured or abraded.

While the virus of glanders penetrates the body via the digestive tract, it is not often that this occurs. Flesh of glandered animals has not been known to infect man, though animals fed on infected matter sometimes become infected in this manner. Glanders may spread from a local center in the same manner as tuberculosis. At first is proceeds by way of the nearest lymphatics. The disease may be restricted for a long time in later stages of a chronic course, to the lymph glands. In acute glanders the bacilli is rapidly absorbed in the blood, producing a generally diseased condition.

The steps of chronic glanders are inflammatory processes accompanied by suppuration, ulceration, granulation and cicatrization. The most frequent seats of infection are the respiratory mucous membranes in the lungs, lymph glands, skin and subcutis. Occasionally other organs are invaded.

Glanders attacking the respiratory mucous membranes occurs in two forms: nodular circumscribed, with the formation of ulcers and cicatrices, and difused or infiltrated glanders. The nodular glanders is the most ordinary kind, and is usually found in the upper portion of the nasal cavity, viz., on the nasal septum, and in the cavities of the turbinated bones. The appearance of nodules marks the commencement of the affection. They vary in size from a grain of sand to a millet seed, of glassy translucent, gelatinous condition, of a roundish oval shape, of a dirty-grey or greyish-red color. These nodules project slightly, and are surrounded by a reddish ring, and as a maximum may attain the size of a pea. They are isolated or located in groups. Microscopically, they consist of a large number of lymphoid cells, which break down in the center with the bacilli lying between them. The nodules become yellow and change into ulcers after the purulent breaking down of their summits. The ulcers are sometimes superficial, sometimes deep and surrounded by a hard, prominent edge. They are sometimes covered by a brownish crust, and may increase in area and depth, even involving the underlying cartilage or bones, exostoses on the turbinate bones, etc. Shallow lenticular ulcers may heal without leaving visible changes; deeper ones leave a cicatrix, either smooth or horny.

Diffuse glanders manifests itself in a diffuse catarrh in the nasal cavity and neighboring cavities, with various results.

In the lungs both the nodular and diffuse forms are found. Infiltrated glanders of the lungs forms tumors from the size of a walnut to that of a child's head.

The nodules of glanders of the skin vary in size from a hemp seed to a pea. The nodules in the subcutis are inflammatory tumors the size of a pea up to that of a hen's egg. They change into a large abcess and burst outward. Of the organs, the spleen most suffers from diseased changes in glanders. At times, the following organs are affected: The liver, kidneys, testicles, brain, muscles, heart as well as the bones.

Scroulcerous disintegration of the respiratory mucous membrane is the atomical change of acute glanders. The early stages of chronic glanders usually escapes notice, as the disease usually runs a course of months and even years. The first symptom is a unilateral, or more rarely a bilateral, nasal discharge, which begins in the form of dirty white mucus.

Nodules and ulcers may not appear until a late stage of the disease. Swellings of the submaxilliary lymph glands, at first somewhat diffused, are symptoms. The state of nutrition becomes visibly impaired. The patient loses condition and becomes quickly fatigued when worked. Occasional patients suffer from irregular and intermittent fever. Glanders of the skin does not so often occur in chronic glanders as in acute glanders.

Acute glanders is comparatively rare in horses, being about 10 per cent of all the cases. It is, however, the usual form in monkeys and their hybrids.

Inoculated glanders, as a rule, assume an acute type. The affection begins with rigors and high fevers. The progress is usually severe, and has an unvariably fatal termination in from three to fourteen days.

The disposition of men to the disease of glanders is fortunately small, and yet cases of human glanders are always occurring, especially among veterinary surgeons. The seat of infection is usually in the hands, the nasal mucous membrane, lips and conjunctiva. After the inoculation stage of from three to five days, the seat of infection first swells and becomes painful; then swelling of the lymphatic glands appear. Sometimes the first positive symptom is febrile disturbance. In 50 per cent of the cases, there is nasal discharge and ulcers on the nasal mucous membrane, also a characteristic swelling of the bridge of the nose. Afterwards pustules, abscesses and ulcers of the skin, ulcers in the cavity of the mouth, in the throat and larynx, and on the conjunctiva; swellings of the joints, high and continuous fever, with grave general symptoms; sometimes also intense gastrointestinal derangement. Death usually occurs in from two to four weeks, though occasionally after only a few days.

Treatment in the case of generalized glanders is usually ineffective. Only when the affection is a local one can the glanderous focus be healed by deep cauterization, excision or erasion.

One prominent authority holds that infection of horses by atmospheric infection is extremely rare. Direct or indirect contact with nasal discharge and secretions of the ulcers of horses affected with the disease, is the most common mode of infection. In acute glanders all the organs are virulent, as well as the blood. Of the membranes, the conjunctiva is especially susceptible.

Persons in attendance on glandered animals should exercise the greatest care to avoid coming in contact with the bacilli of glanders. Washing and disinfection should be done whenever there has been contact with harness, animals or other objects which may be the medium of conveying the disease.

Mallein is a preparation made from the bacilli of glanders, and was first manufactured and investigated in 1891 by Kalning and Hellman, as a means for diagnosing glanders. It is analagous to Dr. Koch's tuberculin.

The only rational method of banishing this disease is the enforcement of sever precautionary measures.

Between the years 1876 to 1886, 20,566 horses died of glanders in Prussia. During this decennial period the disease diminished more than one-half, owing to the enforcement of regulations and laws enacted for the control of the disease. In 1890 there were 782 cases of glanders in London alone. It is estimated that there are 90,000 glandered horses in Russia.

The wide extent of this disease and its virulent nature renders it one of the grave conditions with which health departments have to deal. During the year 1906 the Minnesota Live Stock Sanitary Board tested 1,482 horses for glanders, of which 516 were killed. During the following year 513 were killed in that state on this ground. In 1909 the number was reduced to 353 owing to the vigorous and effective campaign waged by the board against the spread of the disease. In North Dakota during a period of a little more than a year over fourteen hundred horses were killed at a cost of about $70,000. The last named state has passed a law levying a tax on all horses in the state, creating what is known as the "glanders fund," out of which all claims for animals killed on account of glanders are paid. The tax is not found to be oppressive, and by equalizing the losses sustained on account of this disease furnishes an insurance against total loss, which is a source of welcome relief in many cases. More than eight hundred animals were killed on account of glanders in California during the past two years. Nearly two thousand were tested or examined with a view to determining the presence of glanders. It is, therefore, evident that this malady is one of the important problems coming within the scope of this department.

In Iowa almost invariably the source of infection can be traced to horses that are shipped, or otherwise brought into the state from western states, which fact shows the necessity of having a law passed requiring the inspection of all animals entering the state. Almost every other state has a law of this character, requiring a certificate of health from a qualified veterinarian showing freedom from infectious diseases.

One case over which there had been some controversy was taken up at Council Bluffs. An old fire horse, belonging to the city, called "Prince," was tested two years prior to the fall of 1909, by the then Assistant State Veterinarian, and declared to be infected. A member of the city council, who was chairman of the committee having the fire department in charge, demurred against the diagnosis, and employed another veterinarian, who dissented from the diagnosis of glanders and for a time treated the animal. The horse seemed to recover. Two years later, in December, 1909, there was new evidence of disease, and a veterinarian from this department tested the horse and declared him glandered. Consultation with other veterinarians from the State Veterinarian's office corroborated the diagnosis. It was recommended that "Prince" be killed. The diagnosis disclosed a condition that caused the veterinarians in charge to think the animal had been suffering from a chronic case of glanders, continuing from the previous test referred to, and that at the time of the later examination he had developed an acute case. "Prince" was destroyed, and at the post mortem examination there were found positive lesions and a typical case. Ulcers had formed on the anterior left side of the septum; on the anterior portion of the superior turbinated on the left side, and on the anterior portion of the superior and inferior turbinated on the right side; and lesions were also noted in lung tissue. Specimens of the affected tissue were examined microscopically and disclosed the presence of bacilli mallei.

Another outbreak took place near North English. An old family driving horse was found to have a well developed case of farcy and glanders. By the consent of the owner it was killed. The septum nasi was ulcerated nearly its entire length, and at one place so nearly eaten through that a straw was forced through it. The animal had apparently previously suffered from influenza and had not fully recovered. Thorough disinfection was ordered, and the balance of the horses on the premises, twelve in number, were quarantined. Another examination about a month later resulted in the raising of the quarantine by this department.

Horses at the large transfer barn at Iowa Falls became infected recently. We recommended the destruction of two of them. On post mortem they showed pronounced lesions. The remaining twenty-nine horses on the premises were tested, a number reacting. The entire number was quarantined. Another test was made sixty days later, with the result that several horses reacted. One of them was destroyed. These horses are still in quarantine. The source of infection in this case was a horse shipped in from Dakota.

Serious infection of glanders was discovered at Gillett's Grove in Clay county, where four work horses belonging to a farmer were affected. This farmer had immigrated from South Dakota with his horses that year, one of them having slight nasal discharge at the time he was shipped in, which was then supposed to be a symptom of distemper. A considerable number of horses were exposed in this case, but fortunately outside of the man's premises, no infection developed from the exposure. One of the four horses mentioned died and the remaining three were destroyed.

A number of horses were driven through from western states and held for sale at the livery and sales stable at Harcourt in Webster county, during the winter of 1909. At the time these animals were bought, one of them had what was supposed to be distemper, but what subsequently proved to be glanders. This horse was kept in the barn mentioned during the winter of 1909. In the following spring, he was sold to a farmer. Shortly thereafter he became very sick and died. Upon investigation we found that a great many horses had been exposed to this one, as the owners of the barn bought and sold horses during the winter, besides stabling horses for others. Five of their remaining horses were tested and found to be glandered. The owners, refusing to destroy the horses, they were kept in quarantine until fall, when consent was obtained to have them destroyed. Many farm horses that had been fed in the barn contracted the disease. Twenty horses were killed as a result of this outbreak. The stables were cleaned up and disinfected.

During the summer of 1909 a farmer living near Scarville purchased a horse recently shipped into the state from the west. The animal died, supposedly from distemper. This man's neighbor came upon the premises with his horses to help put in the spring crops, thereby infecting his horses with glanders, as it proved later that the horse mentioned as having been shipped from the west, was glandered. A member of the board of trustees, who had attended a lecture at the Farmers' Institute at Lake Mills by the State Veterinarian some time previously, at which lantern slides showing specimens of the lesions of glandered animals had been exhibited, first declared the disease glanders. He called on the department for investigation, and on diagnosis we verified the opinion expressed as to the identity of the disease. Seven horses were destroyed in this locality as a result of this infection.

Cases of glanders were discovered at Rock Valley and Woodburn. The usual suppressive measures were taken, and quarantine established.

A serious outbreak of glanders occurred near Cartersville, Cerro Gordo county, the present year. A number of horses were killed by consent of owners, and many more examined and quarantined.

ANTHRAX.

On August 10, 1909, we were notified of the presence near Remsen, Plymouth county, of a disease believed to be anthrax. A representative of this department was sent to investigate the matter. He reported the purchase, by John Barnable, in Union township, of a bull from west of Le Mars. The animal died suddenly about two weeks later. The following day a cow died in an adjoining pasture, which was being rented by three men. The cow was skinned. It was thought that this cow had been struck by lightning. On the third day thereafter, several cattle died in each pasture. The disease was then diagnosed as anthrax. Vaccine was obtained and used. Sixteen cattle had died up to August 11 and later many more died.

By September 1 reports were made of the deaths of several more animals. Quarantine regulations were generally established.

In all about twenty premises were investigated on account of anthrax, in this part of the state.

It is believed that the infection in this locality originated across the state line in South Dakota, as the disease had been prevalent there for several years.

In September several cases were reported from Leeds, in Woodbury county. In the early part of October cases were reported from Merrill and O'Leary. Numerous cases were reported from Marion township, north of O'Leary, where Thomas Nellis lost thirteen head. A young man working in this vicinity who visited occasionally at O'Leary was thought to have conveyed the infection. Quarantine at some places near Hawarden was raised in November.

Seventy-four head of cattle belonging to a farmer near Marcus, Cherokee county, were vaccinated in November. Four head belonging to this man had died, presumably of anthrax. The premises were quarantined.

The case at Moville which attracted the most attention was reported from the farm of A. L. Rawson, five miles northwest of Moville. Dr. W. E. Miller of Cherokee, made investigations from time to time and reported the conditions surrounding it. On December 3, 1909, Dr. Miller reported the case serious, and about that time Dr. Charles Parke, veterinarian of Kingsley, wrote concerning a case which he had discovered in a steer four miles west of Rawson's place. The Rawson place was promptly placed under quarantine, and all the customary precautions taken to prevent the spread of the disease. The quarantine was not observed in all particulars by Rawson, however, with the results which follow: On February 23, 1910, it was reported that contrary to the quarantine Rawson had bought more horses and placed them on the farm, and that he had been hauling corn over the public highway to market. He had vaccinated his stock a second time, but evidently had not succeeded in immunizing them, as eleven head had died.

By April nineteen horses out of twenty belonging to Rawson had died of anthrax, and also all of his hogs and chickens and three head of cattle.

On April 11 the Rawson place was undergoing thorough disinfection by the united efforts of representatives of the township and Rawson, under the direction of this department. All hay and litter was burned. Holes where carcasses had been buried were partly uncovered and filled with lime. Later Dr. Miller had the barn disinfected with a strong solution of corrosive sublimate, of 1-1000 strength. By June 1st, the place was thoroughly disinfected, including yard and grove in which dead animals had been buried, where fifty barrels of lime had been used. The owner had then only one horse left. He was advised to get a couple of cows and some chickens, but to keep them out of the barn. One horse purchased was placed in the orchard and died within six days. Further disinfection, including that of grain, was recommended. Dr. Miller later authorized Mr. Rawson to purchase a vaccinated horse near Kingsley. This ''immune'' lived seven days, dying very suddenly. Slides made from the blood of this animal were found to contain positive evidence of the disease.

An outbreak of disease appeared about eight miles from the Rawson farm, and on examination of the blood, the disease was found to be anthrax.

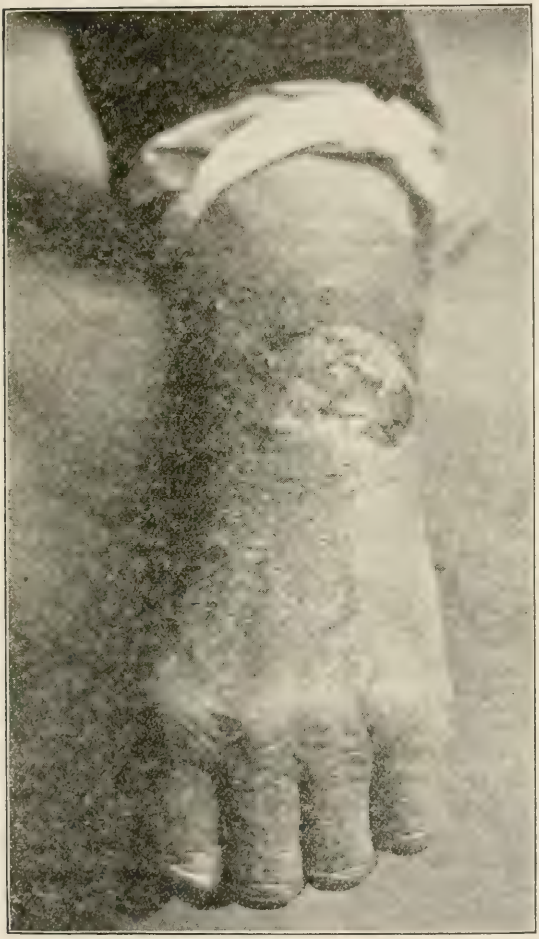
In February this year, Peter Miller of near Remsen, lost six cows from anthrax. These animals had been vaccinated the preceding summer by a veterinarian from Le Mars. Potency of vaccine is open to question. The trouble arose from feeding animals hay from a meadow overflowed by a creek from infected premises.

During the present summer an outbreak of anthrax occurred near Mediapolis, Des Moines county. Twelve head had died when this department was notified and we immediately quarantined the premises. In all more than twenty head died. The infection in the locality was confined to the premises of Edward McDonald, except one case of human infection, that of Dr. H. M. Griffin, of Morning Sun, whose arm was in bad condition. It was thought for a time that it would be necessary to amputate the arm. However, he recovered without this drastic treatment. A son of McDonald's also was infected. The seat of his infection was on the cheek. Prompt measures were adopted for the control of this outbreak, after our department had been called upon, and the work of veterinarians in charge was very efficient and creditable.

In May a call for vaccine was received from a farmer near Kingsley, who reported the death of two heifers near his place from anthrax.

Owing to the tenacious nature of this disease its ultimate eradication from any locality is a matter of considerable time and pains. While the outbreaks are dealt with promptly and thoroughly, it is beyond our power to discover all sources of infection and close them securely. Every effort consistent with the facilities of this department is being made to control and eliminate the disease from the infected localities, and the results have in most cases been entirely satisfactory. In some instances conditions have existed which seemed to baffle the most energetic measures, but eventually the prevalence of the disease has yielded to our effort. There will be no relaxation in the war against these dangerous and insidious diseases. As the cases come under closer scrutiny and observation with increased acquaintance with the individual cases, our efforts must meet with more pronounced results.

One case of human infection of anthrax was reported from the western part of the state, in the person of Julius Rental, of Leeds, Woodbury county. Infection was communicated while he was skinning a bull. He was treated at a hospital in Sioux City, and finally recovered. The infection attacked the hand or wrist. Accompanying cut No. 8, shows somewhat the character and extent of the affection.



No. 8. ANTHRAX INFECTION

The following is an article on the subject of anthrax by Dr. Walter E. Miller, Assistant State Veterinarian:

CHARACTERIZATION.

Anthrax is a specific infectious disease occurring sporadically and in epizootics in herbivora and omnivora, and communicable to nearly all warm blooded animals, and to man. It is characterized by the presence in the diseased tissue and liquids of Bacterium Anthracis, by an enlarged spleen, blood extravasations and by local gangrene.

HISTORY.

Anthrax is among the oldest of the known infectious diseases and descriptions of epidemics of this plague are given by Homer, Plutarch and Livy before the Christian Era. While Chabert pointed out in 1790 that the various forms of the malady, previously described as independent affections, were all one disease, Kausch gave a good description of anthrax, but denied its contagiousness. Not until 1854 did Gerlach prove its contagiousness by experimental inoculation. In 1885, Pollander announced the discovery of unbranched rod-shaped bodies in the blood of cattle dead of anthrax. After Koch's careful description of the morphology in 1876, came Pasteur's proof of the existence of spores in 1877.

GEOGRAPHICAL DISTRIBUTION.

There are very few, if any, countries where the disease has not been found. Europe has probably suffered most from its ravages. However, Northern, Eastern and Central Africa, South American Republics, England, India, Russia and Australia have frequent losses, while there have been outbreaks reported from at least twenty states in America. The methods of disposing of dead animals, isolation and disinfection, together with preventive inoculations, have placed it in the class of rare diseases, save perhaps in badly infected districts.

ETIOLOGY.

Anthrax is caused by a germ called Bacterium Anthracis. This organism is found in the diseased tissue and organs of affected animals. In form it is cylindrical or rod-shaped, measuring 1-5000 to 1-2500 in length and about 1-25000 inch in diameter. Outside the animal body, however, these organisms form small round bodies called spores, which are very resistent to the destructive agents of nature. These same bodies resist heat and cold to a remarkable degree and remain alive and capable of producing disease after years of drying, when finally placed in a favorable medium for development. Having been introduced into a locality, it tends to remain for years, causing a few losses from time to time, depending for its extent on the conditions existing in the particular locality. Improper disposal of carcasses and careless disregard of previously infected marshy land, at once presents two sources of serious proportions. Besides these dangers which are of immediate consequence to stock on pastures, the infection may be carried from place to place on hides, hair, wool and horns, and it may be carried in hay from an infected field, causing virulent outbreaks far removed from the original source.

SYMPTOMS.

The symptoms of anthrax vary both in species and different individuals attacked, according to the location of the disease. Again variation exists with apparently identical lesions. Some of the characteristics noted are the suddenness of attack, serious general disturbances, high temperature, digestive disturbance, brain complications and dysponea. The manifestations may be classified as anthrax with visible localization, and anthrax without the visible localization. The former usually results from infection of the skin and mucous membrane. These lesions are called carbuncles and are circumscribed, cutaneous swellings, which are at first hard, hot and painful. Later they become cold and painless, with a tendency to gangrene. While ordinarily not quite as fatal as internal anthrax, death may be said to occur in dogs and swine, the animals suffer from fever, dysponea, difficulty in swallowing, together with the immediate local effects. Death occurs sooner than when the lesions are found on the skin. Moore further classifies this malady according to course as peracute, acute, and subacute.

Thus we have peracute anthrax or apoplectiform, when the subject dies very suddenly, as if from apoplexy. The animal, without having shown any signs of disease, suddenly drops down in the pasture and dies in convulsions, or an animal apparently well at night is found dead in the morning.

The acute form, in the absence of external swellings, is the one more often observed in cattle. The disease is ushered in with a high fever, temperature 106.7° F. Feeding and rumination are suspended, chills and tremors may appear, the subject is dull and stupid and may manifest great weakness. In this form the malady runs a somewhat slower course lasting not to exceed twenty-four hours. Either of two courses in the acute form may be observed. If the brain is affected the animal becomes restless, excited, stamps, rears and bellows, finally dying in convulsions. If the lungs are congested, there is difficulty in breathing, wheezing, groaning, palpitation of the heart, syanosis and death from suffocation.

The subacute form is known as anthrax fever. While presenting the same symptoms as the other forms, the disease lasts from one to eight days with an average of forty-eight hours. The high temperature, the congestion of the lungs or brain, together with intestinal disturbances with colic, are especially well marked.

It has been stated that milk from cows suffering from anthrax contains Bact. anthracis, this would justify the enforcement of vigorous measures to avert the danger when anthrax breaks out in a herd of dairy cows. The first symptom noticed in a cow is the absence of milkflow at milking time. In the first place it must be remembered that the question is not whether the milk present in the udder of a cow that is dying or is already dead of anthrax, contains the bacilli, but whether in the ordinary circumstances, the bacilli are likely to be present in the milk withdrawn from any of the cows. It is possible that in every fatal case of anthrax in a milch cow, the bacilli are present in the milk at the time of death, but it is also probable that the milk invasion does not occur until the bacilli have begun to multiply in the circulating blood, and it is well known that that is an event which usually precedes death only by an hour or two. While the period of invasion may vary, and the time between the onset of the invasion and death may vary, no animal has a normal temperature after the germ begins to multiply in the blood. "It therefore appears safe to conclude that there is no danger from the milk of an infected cow prior to a distinct rise in temperature.

LESIONS.

The nature and extent of tissue changes depend upon the course of the disease, and any, or all, clinical changes may be absent. Anthrax carcasses soon loose their rigidity and become bloated. Often a blood stained fluid flows from the natural passages. The spleen is usually enlarged from three to five times, the pulp blackish and soft, and occasionally disintegrated. The blood is usually dark with a tarry consistency and varnish lustre, showing little tendency to coagulate. It does not assume its normal color when exposed to the air. Hemorrhages varying in amount from petechiae to extravasations, distended capillaries and gelatinous effusions or a simple serous oedema may occur. The lymphatic glands may be hemorrhagic, oedematous or both. Oedema of the connective tissues of the neck is often very marked. In the abdomen, the thoracic cavity and the perocardial sac more or less bloody fluid is present. In addition to these characteristic signs, the carbuncles already described, often aid in determining the true nature of the disease. While all the foregoing lesions may be absent in the very acute cases, the specific organism is always present in the cadaver.

PROGNOSIS. In most herds the mortality is nearly 100 per cent, with an average of 70 per cent. of all animals affected.

DIFFERENTIAL DIAGNOSIS.

The suddenness of attack and short duration of the disease may confuse one in differentiating cases of poisoning, heat exhaustion, cerebral appoplexy, death from lightning or pulmonary congestion. Little room for doubt, however, can be left where proper bacteriological examinations have been made.

PROTECTIVE INOCULATION.

Much has been written regarding the virtue of various vaccines. And after all discussion has been gone over thoroughly, the fact remains that vaccinated animals continue to die regardless of the method of inoculation. In Germany and England, the stamping out system is considered superior to vaccination. To this end, rigid laws have been enacted as the only reliable means of suppressing the disease.

THE SIMULTANEOUS METHOD.

In the opinion of the writer the injection of anthrax antitoxin together with a small quantity of virulent anthrax bacteria, at least has the advantage of being given at one time. Such a plan should receive more attention where infected ground is available.

PREVENTION.

Having removed all well animals from the barns and yards holding the sick ones, the temperature taken night and morning will indicate any new cases. By careful isolation and safe disposition of the dead animals, the spread of the disease may be checked. Animals do not, as a rule, spread the virus when the first rise of temperature can be detected. The infected stables and yards should be thoroughly disinfected.

The disposition of dead animals in an outbreak is of much importance. Failing to burn a carcass where it falls, it should be buried deeply and covered with quick lime before the dirt is replaced. Then having fenced the plot, it should be burned over frequently to destroy any spores that might be brought to the surface.

CEREBRO-SPINAL MENINGITIS.

Some cattle belonging to a party at Odebolt were pastured and fed at Pilot Mound, where the disease of cerebro-spinal meningitis appeared among them. Other cases occurred in Jefferson county, at Braddyville and Terril, Iowa, and several other points. In most of these cases the disease was attributed to the use of mouldy food. A notable case of ensilage poisoning was discovered in Story county, where a farmer lost eight head of horses within a few days. The State Veterinarian investigated this case, and located the source of the poisoning in mouldy ensilage caused by a leak in the silo. It is advisable to exercise care in the preparation of all feeds in order to avoid the development of fungi poisons.

Report on a few outbreaks of cerebro-spinal meningitis by John Thomsen, Assistant State Veterinarian:

This rather fatal, indefinite affection of domestic animals, epizootic in nature, at times common in certain districts, attacks mainly the central nervous system, the brain and the spinal cord, and especially the meninges or covering of those structures. Of late it has been thought by some writers to bear some relation to the disease known as Pallagra in man. It attacks horses, cattle, sheep, goats and dogs, apparently by preference the young or those whose resisting power to the attack of the disease had not had time to develop. One attack does not give immunity as animals have been known to pass through three attacks, being affected for a week or more each time.

As to the causative agent of this disease, opinions vary greatly as do the post-mortem lesions and conditions in general in connection with the different outbreaks, and while diligent search is being made by many investigators, the theories advanced are as yet numerous. It seems, however, there is but slight divergence of opinion, and can be but little doubt, that the disease has its origin in certain foods or drink, due to certain toxic substances developing in food or drinking water under certain favorable conditions. The conditions suggest a poison introduced from without rather than an affection due to a germ propagated in the system. The fact that bacteria and cryptograms vary greatly under different conditions of life, as do their elaborated products at different stages of their growth, would tend to explain the absence and presence of the disease under seemingly identical circumstances, as also the various recognized forms of the disease.

As regards treatment, preventive measures should receive first consideration and especially where the disease appears in an anzootic form. A complete change of food and water is imperative even though the suggestion of mustiness or fermentation is slight, since the ferments and their products may be present in a dried condition. All animals should, at least temporarily, be removed to clean, airy quarters, and returned to original buildings only after same had been thoroughly cleansed, disinfected and allowed to become dry. In the absence of definite knowledge as to the germ or toxin of this disease, it would seem best to place animals and premises under quarantine.

Medical treatment, owing to the great variation in the different outbreaks, would be largely symptomatic in character. In general, however, we would employ agents tending to lessen the vascular pressure within the cranium and neural canal, and causing elimination of toxic material by the way of the bowels, skin and kidneys.

During the latter part of November, 1909, the writer was requested by Dr. P. O. Koto to investigate as to an outbreak of this disease in Dickinson county. A lot of young horses, numbering nine or ten, had, up to within a week or so of this time, been apparently thrifty, had the run of a pasture with an adjoining barn to which they had free access, and in which they were fed abundant quantities of hay nights and mornings, together with a liberal supply of water from a deep well. The animal first affected, a two year old colt, was noticed by owner to be slow in his movements and have a somewhat unsteady gait, these symptoms becoming more pronounced from time to time for about two days. At the end of the second day, from time first noticed, the colt was found in the recumbent position unable to arise. No amount of help would cause it to regain its standing posture. Appetite appeared fair but mastication and deglutition were badly affected. The animal lay flat on the barn floor, unable to lift its head, and after struggling, by moving its limbs violently, for five or six hours, died.

Within ten days three more had died in a very similar manner. A week or so following this, or at the time of the visit, a careful examination was made and the remaining colts, with the exception of one, appeared normal. This colt was decidedly sluggish in its movements, contrary to its usual habits as stated by owner. Mastication, as well as locomotion, was visibly impaired. Heart action and temperature varied little from normal at this stage. Attempt was made at treatment but the animal succumbed within forty-eight hours from time of attack in a similar manner as those above described.

A search was made for a probable cause of this condition, and the material most in doubt was the hay, which had been cut from low lands, and was of inferior quality and poorly cured. The pasture, while of a suspicious nature, consisting largely of swampy land with a sluggish stream running through its full length, could not be depended upon entirely as harboring the cause, owing to the fact that the lateness of season, with the scarcity of feed, caused the colts to spend most of their time away from the pasture and at the racks in the barn eating hay. The colts were now barred from the pasture entirely, a change was made in the feed from hay to oats, straw and corn, and with the building well cleansed and disinfected, no further losses occurred.

Owing to the considerable similarity as regards surrounding conditions of the two, I wish in connection to mention as to a disease existing in a herd of young cattle, and which, during the latter part of December, 1909, I was asked by Dr. Koto to investigate. The herd numbered originally one hundred and thirty-five head and consisted of calves ranging in age from seven to ten months. Up to within a month or so of this time the whole herd had a thrifty appearance, had access to water from a deep well and was fed corn fodder, wild hay and straw in liberal quantities. The first symptoms of disease noticed were a rather rapid loss of flesh, and arched back, and a somewhat stiffened gait; the weaker end of herd, or those having least resistance, being attacked first. A calf, thus affected, would continue to grow weaker, or more uncertain in its movements, for two, three or four days, and finally unable to arise for the last day or so, succumb. Appetite remained fair to the last, even after recumbent.

At the time mentioned above, thirty-three had died in this manner in spite of considerable medication by owner and others. Of the remainder of herd, forty or more were visibly affected.

Post mortem examinations of two, destroyed for that purpose, revealed nothing grossly abnormal. All of the larger organs were apparently natural. In the subcutaneous tissue, however, was seen yellow or straw-colored exudations in many different parts, with blood extravasations especially on lower part of limbs. The same straw-colored transudations, with slight blood extravasations were noticeable, also in the meningeal spaces of the cord, the peritoneal folds, and in a number of lymph glands, which were considerably enlarged.

For want of a better term, I named it Cerebro-Spinal Meningitis though Food Poisoning or Forage Poisoning might have seemed more suitable. There was no doubt in my mind as to the causative agent being contained in the food. Suspecting the wild hay, which had been cut from land subject to overflow from a stream running through it, I advised the feeding of same discontinued. The owner, being skeptical in the matter, had a load of same hauled a distance of one and one-half miles and fed to another herd with the results that two previously healthy young cattle died in the same manner as above mentioned. The discontinuance of feeding that hay had the desired effect. No more became sick. Out of the forty or more affected, twenty-three died, which made a total of fifty-six dead. The remaining seventeen or more recovered gradually without medication of any kind.

RABIES.

Rabies is one of the oldest known diseases. It is described by Aristotle in the fourth century B. C. Allusions to it are found in Virgil, Ovid, Plutarch and Horace. Cornelius Celsus, first century of Christian era, was the first to employ the term ''hydrophobia.'' No allusions are found to it in the literature of the Middle Ages. Dioscorides recommended excision of wound as protective measure, and Galen in the second century gives special remedies for rabies. Baughin in 1591 gives account of the transmission of rabies from wolves to man. In 1604 an epizootic of rabies broke out in Paris. Toward the end of the seventeenth century it broke out in Italy, and later in Germany and England. From 1779 to 1807 it appeared in America. At about the same time the disease spread over the whole of Europe. Chabert and Hunter conducted notable investigations into the nature of the disease at this time. Viborg, in Copenhagen, and Waldinger, in Vienna, improved methods of investigations of rabies about 1815. Delebere, Blaine and Greve in England in 1818 greatly enriched clinical knowledge of the disease. Hertwig in 1828 published a report of many experiments which were of great value. Virchow, in 1854, exposed the error of the belief that heat, passion, etc., could cause rabies. It is only in recent years that the exclusively infective nature of the disease has become recognized. In 1881 Pasteur gave his discovery of inoculative treatment to the world.

The infective matter of rabies has not yet been produced in a pure condition, though Pasteur has shown that the virus is purest in the central nervous system of infected animals, and less so in the peripheral nerves, salivary glands, lachrymal glands, aqueous humor of the eye, pancreas, mamma, testicles, kidneys and their secretions.

The nervous system offers the most favorable condition for the development of the virus. The blood does not contain the infective material, according to all experiments with the blood of infected animals. The çontagion is not volatile. Paul Bert, by filtering the saliva of rabid dogs through plaster of paris plates and proving it innocuous, showed that the infecting matter is a solid body. He did not succeed in cultivating these bodies, which he regarded as neither micrococci or bacilli. Negri has recently discovered the causative agents of rabies in the shape of protozoa of various forms situated in various parts of the brain. The vitality of the contagion is great. Pasteur observed the brain of rabid dogs for three weeks under very low temperature, without the infective matter losing its virulence. Galtier found that buried cadavers remained virulent from fifteen to forty-four days, despite putrefaction. Viola holds that the contagium of rabies remains active over five months when kept cool in a vacuum.

The disease is transmitted directly by the bite of rabid animals, the saliva serving as the vehicle of contagion. Absorption of contagium in the digestive tract by the consumption of the flesh, milk or saliva of infected animals, is regarded as doubtful. The injection of these substances have produced no harmful results. A fox was fed two months on the brain and spinal chord of twelve rabid dogs without any ill results. However, the intracranial inoculation of milk of rabid animals has produced rabies.

Virus injected into the body may remain dormant for a long time at the site of bite, or may enter the body via the circulation, or along nerves. The period of incubation is longer than in other infective diseases, and in dogs average from three to six weeks, with a maximum of several months, and a minimum of only a few days.

Most domestic and wild animals are subject to the disease.

Post mortem changes in rabid animals are neither constant nor specific. General, though not typical, changes are as follows: Emaciated cadavers become rapidly putrid, and in large animals the hind part becomes greatly distended by gas. The blood is thick and dark-red in color. Mucous membrane of the mouth is congested and swollen, chiefly at the base of the tongue. Muscles appear granular and affected, with fatty degeneration. The heart, liver and kidneys show parenchymatous degeneration. The tonsils are enlarged and infected. The membrane of the pharynx and larynx is reddened, swollen and studded with small hemorrhages. Foreign bodies are found in the stomach, sticks, stones, straw, hair, etc., but little or no food.

Pasteur records a few rare cases of recovery by inoculation after the commencement of the first symptoms of the disease, but only in case of slight attacks. Rabies must be regarded as an invariably fatal disease. The inoculation mortality is not so great. Hertwig found that only 37 per cent of the animals inoculated by him became infected, and Renault, 67 per cent. On an average only 20 to 30 per cent of those bitten by rabid animals become infected. The percentage in mankind is influenced by treatments. One authority says that of one hundred bitten men, only from 8 to 47 per cent became infected. Pasteur puts the per cent at 16 to 80 per cent.

Treatment is purely prophylactic. It is of no avail after the appearance of symptoms of the disease. In men the wound should always be cauterized with a hot iron, potash, sulphuric acid, corrosive sublimate, etc., or excise the bitten part, or the cicatrix. In domestic animals, only in exceptional cases, should this be done.

Pasteur, in 1884, started his experiments with inoculation for the cure of rabies. While he has greatly reduced the mortality in the cases under treatment, the treatment is not regarded as conclusive or absolute in its results.

Preventive measures, such as muzzling of dogs, dog tax, etc., are the most effective methods of controlling rabies.

Rabies runs a typical acute and fatal course in dogs. Two forms of the disease exists—furious and dumb. The furious rabies has three stages, viz. First, the premonitory or melancholy stage; second, the irritative or maniacal stage; third, the paralytic or final stage.

Dumb rabies is distinguished chiefly by the short duration or absence of the irritative or maniacal stage. Death often takes place in two or three days. This form of the disease is more frequent in America than the raging form. Diagnosis is more difficult in dumb rabies than in the other form.

About a dozen calls for investigation on account of rabies have been received during the past two years. Some of these were of several months' standing, and others were of recent origin. In each case prompt action was given, and the outbreaks have been effectively controlled.

In November, 1909, it was reported that ten or twelve dogs in Clinton, Iowa, exhibited symptoms of rabies. The brain of one of these had been sent to Chicago for laboratory examination, and the disease had been pronounced rabies. A pet spaniel which had been kept under observation during its entire sickness, and which had later been killed, displayed the following symptoms: First, a change of disposition, becoming cross and objecting to callers at the house. The next was the loss of appetite and languor, very hot nose and cold legs, which condition continued three days. The dog then became restless and anxious. At the end of three days the dog's mouth was open and driveling, tongue protruding and dark, eyes green, set and staring, head down, ears drooping, tail down and never wagging. Dog was constantly in motion, keeping his chain tight, snapping and biting at anything within its reach.

Some horses and a dog had recently been killed in a nearby town, all suffering with violent rabies. Several dogs had been killed in the north end of town. On January 13th, it was reported that over two dozen dogs had been killed. On January 17th, the report was sent in that a mad dog had entered a stable and bitten six cows. After this time a number more dogs were killed.

A dog afflicted with rabies traveled through the country in the neighborhood of Boone, biting other dogs and hogs. Three dogs known to have been bitten were killed and five hogs belonging to three different farmers contracted the disease and were killed. The dog scattering the disease was apprehended and killed. The route covered by this dog before he was dispatched was along the border of Boone, Story and Hamilton counties.

In the early part of this year a mad dog appeared in the neighborhood of McGregor, in Clayton county, biting many head of stock. One party killed eight of his hogs on account of being bitten by this dog. One of his neighbors killed four cows and one horse. The animals that had been bitten and that were not killed immediately were quarantined and isolated. The Boards of Health of Monona, North McGregor and McGregor were instructed to muzzle or kill all dogs. The schools in some localities were almost deserted as teachers and pupils were afraid to venture out and risk attack from mad dogs. In March Dr. C. W. Anderson, assistant to State Veterinarian, visited Clayton county again, and raised the quarantine in this vicinity. Owing to the prevalence of the disease in the county for several years, however, it was recommended that great care be exercised in the restraint of dogs for some time longer. A case was reported from Elkport on February 15th.

In the fall of 1909 rabies appeared in the herd of M. C. Townswick, near Story City. Three animals were lost, and the usual measures taken to curb the disease by the tying and muzzling of dogs, etc.

Rabies among dogs was discovered in Davenport during the month of May, 1910. As a result of this four patients had been treated for rabies at the Pasteur Institute at Iowa City up to June 19th, from Davenport alone, not fatality resulting.

Several cattle were bitten near Lawler, Chickasaw county, and some killed in June of this year. An investigation disclosed the presence of the disease in the animals.

In May of this year a strange dog appeared at the place of Mrs. Bjorge, near Highlandsville. The dog appeared to be sick. Attempts at driving it away were unsuccessful. The next morning it was found dead in the pasture. More than a month later the cattle began to get sick and it was found that they had rabies. Four cows, one steer and one horse died. All dogs and cats on the place were destroyed and several others in the township. Those remaining were tied up or muzzled. Upon further investigation no evidence of the prevalence of rabies was found in that vicinity.

SCABIES.

One of the diseases commonly brought to our attention by the Bureau of Animal Industry is scabies. The following is an article on the subject by Dr. L. U. Shipley:

Scabies, or scab, is a parasitic disease of sheep (Psoroptic Communis) commonly known as scab or itch mite, being the parasite causing the disease commonly affecting sheep.

There are three other varieties of sheep scab recognized, but of such rare occurrence that only the first mentioned will be considered in this report.

Psoroptic Communis, or common scab mite, are very small, being only about the fortieth of an inch in length in the female and one-sixtieth of an inch in breadth, the male being still smaller. The body is oval in shape, slightly rounded above and flat below, and possessed of eight short legs. The head is pointed and set close to the body, the color is reddish or yellowish gray. They are too small to be recognized by the unaided eye on the body of their host, but placed upon a dark background in strong sunlight, they may be seen to crawl.

Transmission of scabies is generally by immediate contact; contagion will especially take place, easily, when shorn mangy sheep are introduced into a healthy flock, especially in hot sheep-folds where the animals are crowded together, and during winter when the wool is long.

The symptoms are first manifest upon the croup, base of the tail, back, sides, neck and shoulders. The eruptions commence with small spots, which may be isolated or in groups, according to the extent of the infection. By spreading the wool apart we observe flattened pimples the size of a millet seed, of a pale yellow or reddish color produced by the bites of the mite. These spots become enlarged and confluent, which dry up, forming large scabs, and an abundant epidermic desquamation is produced, which forms thick crusts by becominug mixed with sebaceous matter and the contents of the pustules.

These scabs are often hard and of yellowish-brown color, under which the parasites hide and lay their eggs.

The wool becomes loosened and flaky tufts appear upon the surface and fall out, the wool loses its luster, the affected sheep rub themselves against convenient objects; also bite and tear out the wool about the affected parts. When the disease becomes generalized the affected animals become emaciated, weak and die.

Sheep scab is one of the most annoying and destructive diseases from a pecuniary standpoint, being destructive to fleece and animal, if not promptly and vigorously treated.

Scabies became so prevalent throughout the country, and especially upon the western ranges, that federal and state co-operation, along vigorous lines became necessary, and the present outlook indicates that complete success in eradicating this disease will soon be a fact.

Iowa law regarding diseased sheep will be found in Title XII, Chapter 3, of the Code, copy attached to this report.

During the past several years outbreaks of scab in sheep have been investigated in many localities in northwest Iowa. Through the co-operation of the Bureau of Animal Industry with our State Veterinary Department, these infections have been stamped out by proper dipping and hygienic measures.

The treatment of scab consists in using some external application, which by contact will destroy the parasite and eggs, and this can be effectually done only by repeated dipping.

The different dips need not be discussed in this report, sheep growers being well informed by Bureau reports upon formulas for preparing and dipping sheep.

NECROBACILLOSIS.

The disease variously known as lip and leg ulceration, foot rot, necrotic dermatitis, necrotic stomatitis, necrobacillis, etc., has in recent years been widely disseminated, especially among sheep in Wyoming and Montana, and some of the other western states.

This disease known by experienced sheepmen as sore mouth, sore lip, warty mouth, warty nose, ecthyma, stomatitis, etc., has prevailed in this country, east and west, for twenty years or more. Little effort was made to discover the causative agent or to check the disease until recently. As yet, most writers on the subject have not definitely determined the cause of the trouble, but a small number have incriminated the bacillus necrosis.

Sheepmen have customarily attributed the disease to coarse grass, shad scale, bunch grass, clover, alfalfa, beet tops, frost and other causes.

The Bureau of Animal Industry has examined numerous specimens during the past year and suceeded in isolating the necrosis germ. The inoculation of lambs and older sheep with tissue from diseased animals' mouths produced the disease. This fact alone establishes the soundness of the germ theory stated.

The disease is primarily caused by the necrosis germ. The predisposing factor is the abrasion of the skin, allowing the access of the causative organism. Prolonged drouth is often followed by outbreaks of necrobacillosis. This is due probably to the fact that the drouth necessitates closer foraging, inducing the sheep to browse on thistles and roughage. Hard, dry scabs, warty in appearance, are produced, frequently covering the entire lips, which when removed, leave a raw, granulated surface, with or without an exudate of pus. This condition may be present at any stage of the animal's growth. It is not caused, as is often supposed, by the feed or the pasture, or the fact of recent weaning, but these are predisposing causes.

The disease affects calves, pigs, goats, adult cattle, horses, deer, rabbits, dogs and chickens. It is transmissible from one species to another. The Bureau of Animal Industry has observed a number of cases of transmission from one specie of animal to another.

Vigilant preventive measures are necessary to keep a herd clean where it is at all exposed to infection. Treatment produces substantial results in diseased herds. A quarantine of two weeks is advisable before introducing new animals into a clean herd. Infected animals should be promptly isolated and treated.

Prevention should be carried out along three lines: (1) Segregation of the sick from the healthy animals; (2) Close scrutiny of animals that have been exposed to infection; (3) Complete disinfection of pens, corrals and sheds, as necrosis bacilli will retain its virulence under favorable conditions in and around sheep folds for several years.

The walls, racks and troughs should be sprinkled with a 5 per cent solution of sheep dip or similar disinfectant. The manure and a portion of the surface of the soil should be removed and the ground sprinkled with a disinfectant.

Local antiseptics are satisfactory as a treatment if begun in time and applied energetically. In mild cases of the lip and leg form, the scabs and shreds of tissue should be removed with a stick of wood, and three or four times a week a solution of cresol or coal-tar dip, or better, an emollient dressing containing five parts of one of these dips, ten parts of sublimated sulphur, and one hundred parts of mutton tallow, vaseline or lard. In progressive cases, or aggravated, chronic forms a 10 per cent solution of zinc chloride or nitric acid in the strength of one part to seven parts water. Carelessly applied caustic solutions may do more harm than good. Treatment of the venereal form especially demands careful handling.

Through notice from the inspection service at Omaha of the United States Department of Agriculture, we have learned of the persence of necrobacillosis in Pottawattamie, Shelby, Crawford and Hancock counties during the past year. A shipment of one hundred and ninety-seven animals from Crawford county was slightly infected. About four hundred and fifty animals, comprising a shipment from Pottawattamie county, was found to be infected, though not in an advanced form. Two hundred and forty sheep from Shelby county contained infection. These localities were duly visited by representatives of this department and proper investigation made as to origin and progress of the disease. So far as we have authority, quarantine and sanitary measures have been enforced.

The first outbreak occurred in Hancock county, which was personally investigated by the State Veterinarian. A number of sheep had been imported from an adjoining state. The diseased condition was at first supposed to have been caused by the use of too strong a dip, but upon further investigation, typical symptoms of necrobacillosis, or lip and leg ulceration, were discovered.

The United States Department of Agriculture, Bureau of Animal Industry, Washington, D. C., has issued the following article on lip and leg ulceration (necrobacillosis) of sheep:

As a result of several investigations of the disease affecting the mouths and legs of sheep which is more or less prevalent in certain districts of Wyoming, a diagnosis of lip and leg ulceration (necrobacillosis) has been made.

Insofar as the name applied to this affection is concerned it is quite immaterial so long as such a name is distinctive and does not confuse the disease with other affections of an entirely different nature. For instance, it is very important that the name "foot and mouth disease" should not be given to this affection, because the two diseases are totally unlike in symptoms, are caused by different specific agents and foot and mouth disease is so highly infectious that every outbreak which has appeared on American soil has been quickly stamped out before it became widespread. Furthermore, the ulcerative condition which affects the lips and legs of sheep does not spread from animal to animal in epizootic form like foot and mouth disease, but certain sheds, feed lots, corrals, or pastures become affected with the germs causing the disease, which enter the tissues when the mouth or leg is injured by briars, stubble, rough forage, etc., and set up disease. During the winter when snow is on the ground and the weather so cold that the surface of the snow becomes hard and crusted, thus making grazing very difficult, the disease may spread very rapidly and easily, owing to the numerous scratches received upon the nose and feet becoming infected with the blood and bits of scab which drop from the affected sheep.

Lip and leg ulceration is caused by the necrosis bacillus, and as the skin of the legs, muzzle and lips are involved in many cases, the name of necrotic dermatitis (necrotic inflammation of the skin) has been applied. It quite frequently happens that the ulcers and sores on the outside of the lips extend into the mucous membrane, lining the inside of the lips, as well as to other parts of the mouth, or lesions of the mouth may occur through licking the ulcers on the legs, which accounts for the disease being also termed necrotic stomatitis (necrotic inflammation of the mouth). The important things to be recognized are the nature and cause of the disease, and in this connection it may be stated that all the differing manifestations of the infection by the necrosis bacillus are often brought together under the term necrobacillosis. Other names which have been given this disease are acute dermatitis in New Zealand; impetigo labialis in Canada; or, crusta labialis, and contagious pustular dermatitis in England and Scotlnd, and teigmaul and maulgrund in Germany. The disease also exists in the West Indies, New Mexico, Oregon, Kansas, Montana, Virginia, Maryland, and probably in other sections of the United States.

The lesions in the early stage usually appear as an acute inflammation of the skin on the outside of the lips. The pimple-like formation is attended with much inflammatory swelling with a decided tendency toward the formation of pustules. They dry and form crusts of a dark grayish color and of a fungoid appearance. The growths extend rapidly and become in the course of a few days confluent, forming a large diffused scab, which when removed is found to cover an ulcerative surface. Simultaneous with this the lips become tumefied, swelling to two or three times their normal thickness. The appetite usually remains good, but the animals feed with difficulty owing to the sensitiveness of the affected parts. In some cases the scab extends from the lips up over the cheeks, between the eyes, and at times a muco-purulent discharge appears, which adheres to the nostrils and together with the swollen condition of the surrounding tissues causes a more or less complete occlusion of the air passages, resulting in labored breathing upon exercise. In some cases the lesions extend into the mouth, producing erosions on the inside of the lips, on the gums, and on the dental pad or the hard palate. These lesions, which are of a spongy consistence and present a warty appearance, are especially noticed on the lambs.

Lesions on the legs as a rule co-exist with those on the lips, hence the origin of the term "lip and leg ulceration." The sheep at this time will show some lameness, especially if the ulcers appear about the coronet, in the fold of the fetlock, or in the vicinity of a joint. The progress and appearance of the ulcers upon the legs are identical with those upon the lips, and they are soon covered by a thick, dry crust which, when forcibly removed, exposes a granulating surface covered with a creamy pus.

Similar ulcers and crusts due to the necrosis bacillus are occasionally noticed on the teats, udders, and external genitals of ewes and on the sheaths of bucks. This latter condition may occur without any lesions being apparent on the lips or legs, and the disease is then known as necrotic venereal disease of sheep, or big pizzle, sometimes erroneously termed syphilis or clap. As the lambs are born to such diseased ewes they also become infected, the lesions appearing about the head and on the legs as irregular ulcers, which later form wart-like scabs projecting above the surface. If the disease is neglected these ulcers may spread over a large area and extend deep into the tissues. The general health of the animal is but little disturbed if the course of the disease is favorable, fever being absent or remaining low (104.-5 degrees Fahrenheit).

Treatment of this disease is very satisfactory if begun in time and applied energetically. It should not be deferred, as better results will be obtained by attacking the outbreak as soon as discovered than can be expected if the disease is permitted to spread among the band or penetrate deeper into the tissues of the affected parts. One of the first steps to be taken in the treatment is to separate all the sheep that are in any degree diseased from those that are healthy.

If only a few animals are affected the best results are obtained quickly to any of the common antiseptic solutions. Should the diseased areas and washing them once daily with a solution of one of the cresol or coal-tar dips permitted in the official dipping of sheep for scabies, the dip being used at a strength one-fourth greater than that prescribed on the label for scabies. The disease responds quickly to any of the common antiseptic solutions. Should the disease attack a large number of animals the ulcers on the legs may be best treated under range conditions by causing the affected sheep to pass twice daily through a shallow trough containing a 5 per cent solution of carbolic acid or a solution of any of the above mentioned sheep dips. The ulcers of the mouths may be treated by applying this same solution to the affected parts by means of swabs. Under favorable weather conditions the affected animals may be dipped in one of these dips on two or three occasions with very satisfactory results, provided all the diseased parts are reached by the solution. In case the lesions on the animals have become far advanced it will be necessary to hand-treat them by applying a stronger solution of the dip, say one part to three parts water, once daily. Four or five applications of this treatment are usually sufficient to cure the vast majority of cases without complications, but those of the aggravated type must be handled for a longer period and with a more penetrating and caustic solution. For this purpose one part of nitric acid in seven parts of water, applied externally to the necrotic area only, will be found very efficacious and easily applied to the most severe cases.

Experience has shown that sound sheep may be safely pastured on land that has previously been occupied by animals suffering from lip and leg ulceration if the winter's frosts have been allowed to intervene. The germs of the disease seem to be effectively subdued by this means, and pastures which have become contaminated one season may be considered safe for their customary usage during the following season. The pens, corrals and sheds, however, must be carefully disinfected to prevent the recurrence of the disease, as these bacilli will retain their virulence under suitable conditions in and around the sheep fold for several years. The walls, racks and troughs should be sprinkled with a solution containing one pound of pure carbolic acid to four gallons of water, to which enough lime has been added to make the sprayed area conspicuous. The manure and a portion of the surface soil of the corrals should be removed and the ground sprinkled with the above solution, or a similar disinfectant.

STOMATITIS APHTIOSA SPORADIC APTHAE OF THE ORAL MUCOUS MEMBRANE.

By Dr. F. H. Hollingsworth.

CAUSE.

In veterinary medicine, the name of aphthae is given to vesicles on the oral mucous membrane, which are produced by an accumulation of serum under the epithelium of the mucous membrane. It has been known from remote times as "Sporadic Aphthae" and its causes are most probably fungi which attacks forage, particularly those that infect clover. These and other infective fungi produce in some cases a catarrhal, in others an aphthous, and sometimes even an ulcerous or croupy stomatitis.

SYMPTOMS.

The phenomena of aphthous stomatitis consists of the formation of vesicles on the mucous membranes of the lips, cheeks, tongue and gums, which vesicles are filled with serum, and are either isolated or massed in large numbers. They usually burst in a short time and become changed into congested sores which quickly heal. Besides these vesicles there are usually symptoms of catarrhal stomatitis, with redness and swelling of the mucous membrane and salivation. We always notice a smacking noise during the movements of the lower jaw, silimar to that which takes place in foot-and-mouth disease. After the bursting of the vesicles, the mucous membrane remains painful for some time. There is loss of appetite, rise of temperature which rapidly subsides in dairy and milking cows. Besides the inflammation of the mucous membrane, an erysipelatous dermatitis breaks out on the udder and teat.

DIAGNOSIS.

Sporadic Apthae may be readily confounded with foot-and-mouth disease. A prompt and exact differentiation is not always possible, especially when several animals become affected at the same time, and when eating the same food. The fact that the disease produced by these fungi cannot be transmitted to healthy animals will be decisive, and consequently, in doubtful cases, experiments should never be omitted. Also, the coronets of the hoofs in sporadic apthae is free from apthous lesions, although the animals are foot-sore, are found lying down most of the time, saliva stringing from the mouth and refuse food or drink, and consequently, great emaciation.

THERAPEUTICS.

The treatment consists of frequent rinsing out of the mouth with disinfectant and astringent lotions, such as boric acid, creolin, salicylic acid; suitable quarters and avoidance of rough forage.

Numerous cases of Stomatitis Aphthosa have occurred throughout the state, and especially in southwestern Iowa along the Missouri river. Perhaps the most serious outbreak occurred in the vicinity of Council Bluffs, and at the State Institution at Glenwood, where it was at first mistaken for foot-and-mouth disease. The necessary treatment was applied and the usual sanitary measures enforced.

FOOT-AND-MOUTH DISEASE.

This disease has never occurred in Iowa, though it has appeared in the United States at intervals during the past forty years, the last being in the fall of 1908, when it was found in Pennsylvania, New York, Maryland and Michigan.

Prompt action was taken and a quarantine proclamation by the Governor of Iowa was published against the importation of cattle from localities in which the disease existed. This quarantine was raised the following year, when the disease had been thoroughly stamped out.

During the period of the quarantine, numerous calls were received at this office from points in Iowa on account of cattle supposed to be infected with foot-and-mouth disease, notably from one of the state institutions, which had recently imported cattle from one of the states mentioned. Upon investigation it was found that these animals were infected with cow pox, which yielded readily to treatment.

Circular No. 141 of the Bureau of Animal Industry contains a thorough description of this disease and methods for its treatment and eradication.

CONTAGIOUS ABORTION.

General abortion among mares was investigated in Wayne and adjoining counties.

While this disease does not appear to be prevalent in the state at the present time, there are no doubt a number of cases which have not been reported.

The following article on "Contagious Abortion of Cattle," written by Dr. F. J. Neiman, treats of the nature of this disease.

This is quite an old disease, and while I have nothing new in particular to offer on the subject, my observation would indicate that the disease is not on the increase, only an occasional outbreak confined to a farm, or an adjoining farm being called to my attention.

No doubt, the disease is due to a micro-organism, but whether or not the bacteriologists have isolated the germ, that fulfills Koch's postulates, I am not prepared to say. According to European and American investigators, there are several species of micro-organisms that will produce the disease.

The manner of infection is usually directly due to an infected bull during copulation, although, occasionally, the infection is transmitted indirectly by the animal coming in contact with infected material, either through the digestive or respiratory tracts.

No aborting animals should be bred until after two or three oestrums. Bulls which have served cows of infected herds, should not be permitted to serve healthy cows for some time. Careful local disinfection should be carried out and the animal withdrawn from the stand. Where value is not too great, I would advise that they be isolated, fatted, and sold for slaughter. This would apply to the female as well.

Taking into consideration the long period of incubation and the resisting power of the micro-organism causing the disease, sanitary measures require time and isolation of infected animals, especially those aborting. The resisting power of the animal gradually increases until after two or three abortions, the animal becomes immune.

Some become sterile after an attack, but this is not usually the case, and the time required to establish immunity is too long, and the loss is too great. In combating the disease, bear in mind the long period of incubation, the resisting power of the germ, and do not expect immediate eradication of the disease, as some animals will harbor the germ some time after the treatment has begun.

Therefore, I would advise the removal of the placental membrane not later than twenty-four hours after an abortion. Thoroughly irrigate the uterus with a good antiseptic solution, followed by frequent vaginal irrigations. Separate attendants would be beneficial. Occasionally, wash and disinfect the hind quarters of animals and all stalls, or materials they may come in contact with.

This should be kept up for some time, as an animal may be sterile herself, but still harbor the germ, and so be infectious to others.

COITAL EXANTHEMA.

Cases of this disease have been discovered at various points in the state. The disease is not fatal and yields readily to treatment.

The disease is characterized by vesicles and pustules on the external genitals, and attended by great local irritation. It usually runs a mild course of from seven to fifteen days.

It is known as a contagious disease. It is communicated from animal to animal by coition.

The symptoms are sometimes mistaken for those of maladie du coit.

FEDERAL MEAT INSPECTION.

The first positive step taken toward the inspection of meat in the United States was the enactment of the Federal Meat Inspection Act of March 3, 1891. That act merely authorized the certification of the absence of disease in meats inspected.

The act of June 30, 1906, extended the scope of this service.

Under the first-named act, inspection had been conducted at 163 establishments in fifty-eight towns and cities up to June 30, 1906. During the year following this date, inspection had been conducted in 708 establishments in 186 towns and cities. Since the enactment of the new act there have been 2,290 employes as against 981 under the former act. The appropriation under the first act was $771,661, and the new law provided a permanent appropriation of $3,000,000 for meat inspection.

There are three forms of slaughter: (1) Wholesale and packing; (2) Slaughter by small butchers; (3) and farm slaughter.

Government inspection covers only the first-named for interstate and foreign shipment.

During the year 1908 there were slaughtered under government inspection 7,279,271 cattle, 1,958,274 calves, 38,643,105 hogs, 10,304,662 sheep and 42,981 goats. These animals were slaughtered at 340 different abattoirs. In addition to this, government inspection is conducted in a large number of establishments where no slaughtering is done, inspection having been made during the year mentioned at 810 establishments located in 221 cities. This is an increase over the preceding year of 108 establishments and eighty-five cities.

Packing houses, in order to secure the inspection service, are required to conform to the rules and regulations of the department respecting the disposition of condemned carcasses and waste, and to observe sanitary regulations, etc.

Under the provisions of the Pure Food Law, government inspectors pursue the packing house products into the channels of trade and protect the consumer from misbranding, adulteration and unsanitary treatment generally.

Animals are examined before slaughter and after. Due precautions are observed to preclude the dissemination of germs from diseased animals.

The smaller, local slaughter houses are almost invariably unsanitary and uncleanly. It is recommended that municipal slaughter houses be established wherever practicable, subject to inspection and regulation.

In Germany the municipalities own the slaughter houses, and cleanliness and sanitation has been the result. More than six hundred cities own their slaughter houses in that country.

It is estimated that about 5,000,000 cattle, 8,000,000 sheep and 10,000,000 hogs were slaughtered in this country in 1907 without government inspection. These 26,000,000 animals were passed on to the consumer without regard to their condition with respect to disease, except such local restrictions as may prevail in certain localities.

Municipal slaughter houses not only tend to cleanliness and safety from infection, but also promote economy in the utilization of waste products. These products are utilized to far greater advantage in a large plant than in a small one. Cattle dress only about 60 per cent of live weight, sheep 50 per cent and hogs 80 per cent. The remainder is waste, unless there are facilities for transforming it into salable commodities. In cattle, the value of the hide and offal if properly handled equals 15 per cent of live value of animals. The skillful removal of hides in the larger plants often results in an increased price for hides of about 1 cent a pound, over that paid for skins improperly removed by small butchers and farmers. Other items are correspondingly enhanced in value under systematic and economical treatment.

It will thus be seen that municipal or combined slaughter houses are advantageous both to the dealer and the consumer. A full knowledge of conditions in many of the smaller slaughter houses would cause the public to demand thorough inspection and sanitary regulation. It is possible under the present system to introduce into the markets meat fairly reeking with germs. Such meat is innocently purchased every day by patrons of the market.

In any other line of food products, this indifference is regarded as almost criminal. The meat industry owes to itself a thorough inspection of its products, and an effective system of sanitary regulation, not only of the output of the larger plants where the government inspection prevails, but of *every* establishment where animals are slaughtered for the public market.

HOG CHOLERA SERUM.

At the earnest solicitation of the chief of the Bureau of Animal Industry, the State Veterinarian in 1908 visited the Bureau's hog cholera experiment station at Ames, together with live stock sanitary boards and veterinarians from other states, in order to become familiar with the methods of manufacturing serum for the prevention of hog cholera devised by Drs. Dorset, McBride and Niles of the Bureau named.

The Thirty-third General Assembly was urged to make some provision for the manufacture of hog cholera serum under state supervision, and accordingly the present law relating to this subject was passed, which appears in full elsewhere in this report.

The following circular was issued and distributed:

HOG CHOLERA SERUM.

A vaccine for the immunization of hogs against hog cholera. Manufactured by the State of Iowa, under the direction of the State Veterinary Surgeon.

MANUFACTURED UNDER DIRECTION OF STATE VETERINARIAN.

Chapter No. 151, of the laws of the Thirty-third General Assembly of Iowa, provides for the establishment of a laboratory at or near Des Moines for the manufacture of hog cholera serum. This serum is to be manufactured under the direction of the State Veterinary Surgeon and furnished to applicants within the State of Iowa, with instructions for its use, at cost of manufacture.

LABORATORY ESTABLISHED.

The laboratory for the manufacture of this serum has now been established and the serum will be produced by the same method that is employed by the United States Bureau of Animal Industry.

VALUE OF SERUM.

It is to be understood that this is not a cure for hog cholera or swine plague, but is intended as a preventive measure in case of an outbreak or where an outbreak is threatened.

In cases where the disease has had a chance to advance, it is possible that some of the hogs will contract the disease to a fatal extent and develop cholera and die from it before the serum has had time to take effect, so it is very important that the treatment should be applied as early as possible in case the disease makes its appearance.

SHOULD BE VACCINATED.

When the disease makes its appearance in a herd or in the neighborhood, all the well hogs should be vaccinated, and all the sick hogs should be destroyed and burned, and should any of the vaccinated hogs develop cholera, they too should be destroyed and burned. This will prevent, to a certain extent, the spread of infection. Diseased hogs should be removed from the public highway and the pens and enclosures thoroughly cleaned and disinfected. Hogs should be kept in dry pens; dogs should be kept tied, as they may carry the disease. Wagons or hog racks used to remove the dead hogs must not be taken onto a neighbor's premises. Only the one whose duty it is to feed and care for the diseased hogs should be allowed near the pens; this attendant to keep away from neighbor's hog pens or enclosures.

THINGS TO BE REMEMBERED.

As a preventive measure when the disease appears in the neighborhood the following precautions should be observed:

Keep your dog tied up, as it might carry infection.

Do not allow your hogs to run, but keep them in small, dry pens or enclosures.

Breeding hogs shipped in from other points should be kept apart from the drove for at least two weeks before being allowed with animals of their kind.

If an outbreak of the disease has been experienced, no fresh hogs may be permitted to be brought onto the infected premises until six months after the last hog thereon has died or recovered.

Every effort should be made to carry out the above instructions as all hogs are susceptible and it should be borne in mind that "an ounce of prevention is better than a pound of cure."

PRICES.

This serum is put up in bottles of three different sizes, containing 60 c. c., 120 c. c., 240 c. c., prices of which are $1.50, $3.00 and $6.00 respectively; these prices being subject to change. The quantity of this serum necessary to immunize a hog is regulated by the weight of the hog; pigs 2 to 4 weeks old requiring 8 c. c., 4 weeks to 75 pounds 8 to 16 c. c., 75 to 125 pounds 20 c. c., 125 to 175 pounds 30 c. c., 175 to 225 pounds 40 c. c., 225 pounds and upward 60 c. c.

VETERINARIANS SHOULD BE EMPLOYED.

This serum is thoroughly tested before it is sent from the laboratory and it is advised that a veterinarian be employed to apply this treatment, as they are better acquainted with the conditions and indications, thereby assuring the best possible results from the use of serum.

This serum may be had upon application to the Director of the laboratory at prices quoted, each bottle being labeled with instructions and quantity necessary for hogs of various sizes.

Further information furnished upon application.

PAUL O. KOTO,
State Veterinary Surgeon.
Director Hog Cholera Serum Laboratory, Des Moines, Iowa.

SERUM PLANT.

In carrying out the provisions of the statute published herewith, this department has secured 114 acres of land north of the state fair grounds, and established thereon the plant described in the law which appears herewith.

More than 100,000 c. c. of serum has been manufactured and over $2,500 has been received from the sale of serum.

Hog raisers, by promptly notifying this department, may materially aid in eradicating the disease, as well as contributing to their own advantage. The work is much simplified and the cost greatly reduced by starting early in the spring and reporting every outbreak as soon as it appears.

The plant used for the manufacture of serum consists of a laboratory, shelter pens, crematory and necessary buildings constructed according to plans and specifications designed with special reference to the requirements of this work.

The tract is divided into five and ten-acre lots and fenced with woven wire fencing separated by alleys for the segregation of immune and susceptible hogs.

In constructing the laboratory we have, as nearly as possible, aimed to follow the advice of Dr. W. B. Niles of the Bureau of Animal Industry. We are also under obligation to Dr. Niles and the Bureau of Animal Industry for the necessary supplies of virulent blood and immune hogs with which to start the manufacture of serum.

In view of the certainty of the results of serum inoculation, which have passed beyond the experimental stage into the realm of established fact, this establishment must be regarded as indispensable to the satisfactory regulation and treatment of cholera in hogs, as the disease occurs at various points throughout the state and is brought to our attention. The production of serum under state auspices has been generally established throughout the country and meets the requirements as to uniformity of strength and reliability as to quality, etc. The manufacturing of serum should receive the continued support of the state, in order that the great industry of hog raising may not suffer.

HOG CHOLERA AND ITS PREVENTIVE TREATMENT.

HOG CHOLERA.

BY DR. R. E. GRAHAM.

Hog cholera or swine fever is an infectious disease characterized by its contagiousness and high death rate, attacking swine in two forms; the acute and chronic types. The former is characterized by its sudden onset and rapid course which terminates in death, while the latter or chronic form lingers for weeks and even months and generally results in death. Recovery produces a nonsusceptibility to subsequent attacks. The causative agent is supposed to be the same in both cases, the courses or type of the disease being determined by the virulency of the organism and the resisting power of the hog. The lesions of the peracute cases are not as well defined as those in subacute and chronic cases, and a carcass from the very acute type might not show sufficient lesions to diagnose the case while in the subacute or chronic cases the intestinal lesions predominate, showing circumscribed or diffused ulcers in mucosa of the stomach, button like ulcers in the colon, inflammation of the entire intestinal tract and ulcers at the ileo caecal valve, the latter being the most certain pathognomic lesion in hog cholera. In general outbreaks the most acute types are seen at first, followed by the less acute and sometimes the chronic form. The infection on being passed from one animal to another gradually becomes weakened. Mortality varies from 70 to 100 per cent.

CAUSES.

Until recent years the bacillus cholera suis has been accepted as the specific cause of hog cholera. The work of De Schweinitz, Dorset, McBride and Niles proved the hog cholera bacillus to be a secondary invader and the ultimate primary cause was an invisible, ultramiscroscopic micro-organism, a virus in the blood and excretions of the latter, the urine in particular. If the cause is a germ, it is so small, or perhaps unstainable, and the strongest microscopes will not detect it. After removing the bacillus cholera suis by passing through a porcelain filter, the filtrate when introduced subcutaneously seldom produced the disease, but on intravenous injections of the same cultures, occasionally resulted in death.

Schreiber considers the toxin formed by the hog cholera bacillus as the exciting cause or that the ultra microscopic virus is an excretion of the true bacillus of hog cholera. Hutyra considers the virus responsible not only for the so called hog cholera but for the swine plague as well. In conclusion it has been generally accepted that the ultra-microscopic micro-organism or virus is the primary cause, and the bacillus cholera suis a secondary invader.

PREDISPOSING AND ACCESSORY CAUSES.

Anything which lowers the vitality of animals renders them more susceptible to disease upon being exposed. For example, improper feed, a one-sided ration of corn, so common in corn raising districts, impure water from stagnant pools and poorly drained hog lots, unsanitary, ill-ventilated houses, filthy troughs, buckets and slop barrels. These things in themselves do not cause cholera, but they render an animal less resistant and therefor an easy victim upon being exposed.

Pens and houses in which cholera hogs have died should be considered infected. The feces and urine passed by the sick animals may contain the germ and be carried to all parts of the lot on the feet of healthy hogs, or by the attendant from one pen to the others. Anything which tends to scatter dirt, manure, water or feed from infected pens as birds, rats, dogs or streams can spread the disease. Buying of hogs from recently infected herds may spread the disease and should be guarded against. Hogs which are shipped should especially be considered as a source of infection, as stock yards, highways and stock cars are often used to convey and shelter cholera hogs without a subsequent disinfection.

To avoid this, hogs received via railroads should be quarantined twenty days before being allowed to enter the herd, as they might develop cholera from exposure in cars or in stock yards. This is oftentimes the case on returning hogs to a herd after exhibiting at stock shows or fairs, and should be remedied by quarantining upon arrival thereby insuring the remainder of the herd against exposure.

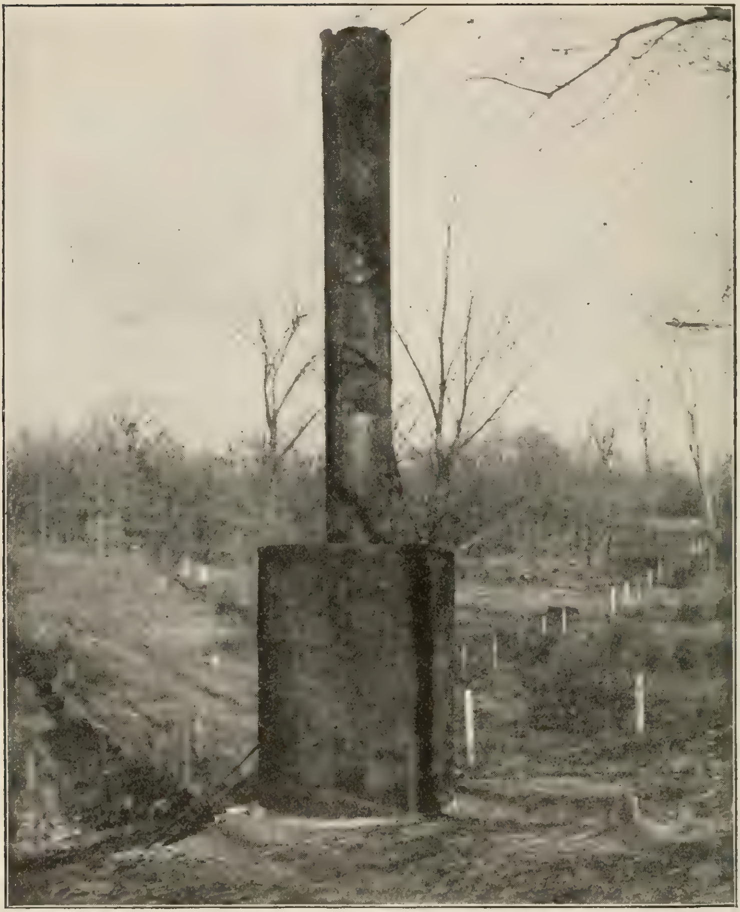
SYMPTOMS.

Probably the first thing noticed by the attendant of the herd is a partial or complete loss of appetite; at this stage the disease is often well along in the incubation period, and in peracute cases death may follow in from six to forty-eight hours, in the subacute or chronic form we observe a longer chain of symptoms; such as loss of appetite, dullness, fever; the higher the temperature, the more sluggish the animal appears, and it may lay drowsily around in the shed or buried in the manure pile or straw for hours undisturbed by the surroundings. Constipation or diarrhoea may be present in alternate attacks. Persistent diarrhoea renders the animal very weak and artificial inoculation lengthens the incubation period. He may stagger and fall helplessly, the weakness being more apparent in the hind quarters, and the animal is often unable to raise himself to his feet, and stands with his hind legs in criss-cross fashion with the abdomen well tucked up. Breathing is labored, quickened and shortened when mucous membranes of the air passages are inflamed. Slight hemorrhages from the nostrils are sometimes observed. Short hacking cough and occasionally slight attacks of the thumps. The eyes may be swollen and inflamed and a purulent sticky discharge glues the lids together making the animal blind. One or both eyes may be affected. The skin of the abdomen, neck, thighs, coronet, nose, ears may show redness, growing darker as death approaches, until finally at the time of death the affected areas of the skin are a dark purple. Sloughs of skin along the back are sometimes observed leaving raw sores. The skin lesions are more clearly shown in the Chester White and Yorkshire breeds.

It should be understood that all cases of hog cholera do not show all these symptoms. Some cases show one portion of the symptoms while other cases show another, and if all the described symptoms do not happen to appear we are not justified in calling it some other disease, as all cases of cholera are not typical. The outbreaks of hog cholera are comparatively easy to diagnose though in experimental inoculation of the disease at the State Laboratory we have observed very little evidence of typical cholera, and if we had not known the source of the disease, would have hardly been justified in diagnosing it hog cholera.

AUTOPSY.

Suspected cases of hog cholera should be examined after death. The person holding the post mortem should take antiseptic precautions with his hands. Thoroughly disinfecting them before and after, and if receiving any cuts or scratches during the process stronger antiseptics or mild cautery should be used on the part. Though hog cholera is not



No. CREMATORY

communicable to man, there is danger of anthrax, septic infection and tuberculosis.

First notice the skin which may be red or purple, then lay the hog on its back and make an incision through the skin and muscles from the anus along the median line to the throat, laying open the thorasic and abdominal cavities for examination. In peracute cases the lesions are very similar to hemorrhagic septicaemia with hemorrhages in any or all of the tissues accompanied by inflammation of the intestinal tract. The lungs may show various stages of congestion, areas of hepitatization and fine petechia on their surface, the latter being most characteristic lesions in the lungs of hog cholera. The heart may show hemorrhages in the pericardium, endocardium and myocardium. The lymphatics of the thorasic cavity are dark and congested. The lining membrane of the chest cavity or pleura may show petechia, and occasionally adhesions to the lungs or the walls of the chest cavity are observed. The muscles of the abdomen may show fine hemorrhages, and in subacute cases the intestinal tract shows the most pronounced lesions. The stomach is first to be examined which may show intense inflammation of its mucosa with diphtheritic or necrotic areas. The colon is generally most prominently affected, and often can be noticed through the walls without opening, and is the location of the button-like ulcers of hog cholera corresponding in their location to the solitary lymph folicles of the intestinal tract. The ileo caecal valve is generally the seat of ulcers which are considered, when found, pathognomonic of hog cholera. The mucosa of the small intestine is inflamed and may show necrotic or diptheritic changes in its lining. The mesentary, or membrane which suspends the intestines, is congested and its lymphatic glands stand out as dark purplish nodules. The peritoneum, or lining membrane of the abdominal cavity, may show fine hemorrhages and deep seated button-like ulcers on the colon may extend to the serosa and result in septic peritonitis. The kidneys are covered with hemorrhages varying in size after the peritoneal covering has been removed. The kidney is also darker in color than normal. The mucosa of the bladder may show petechia and intense inflammation with hemorrhages which accounts for the slightly blood stained urine, which is sometimes passed. The body lymphatics do not become affected as do the visceral but the inguinal, cervical, sublumbar are generally larger than normal and slightly congested.

IMMUNITY.

The rapid advances made in the study of immunity during the past few years render it essential that we consider a few of the basic principles upon which the serum immunization against hog cholera rests, before describing the process.

Immunity is that condition in which an individual or species of animal exhibits unusual or complete resistance to an infection for which other individuals or species show a greater or less degree of susceptibility. Consequently it is only in connection with infectious diseases that we consider immunity. Immunity may be of various types. We have, for example, natural immunity, when individuals or species possess an inherent quality which prevents them from contracting the disease to which other individuals or species are susceptible. This immunity is not brought about by any condition which occurs subsequent to birth. We have acquired immunity when an attack of a certain infectious disease brings about a change which renders the individual immune to further attacks of the same disease. Varieties of acquired immunity are active and passive. The active immunity, which is usually of a lasting nature, results from infection or intoxication and depends upon specific reaction on the part of the tissue cells in response to the injury produced by the bacteria or their toxins. We have passive immunity when an immune serum is injected and depends upon the introduction of immune bodies rather than their production through an active process on the part of the animal.

Any one of these types of immunity may be relative or absolute, anti-toxic, or anti-bacteria. If absolute, infection is impossible. There are temporary conditions such as overwork, hunger or exposure when immunity is relative and infection is possible. Immunity is usually of the relative type.

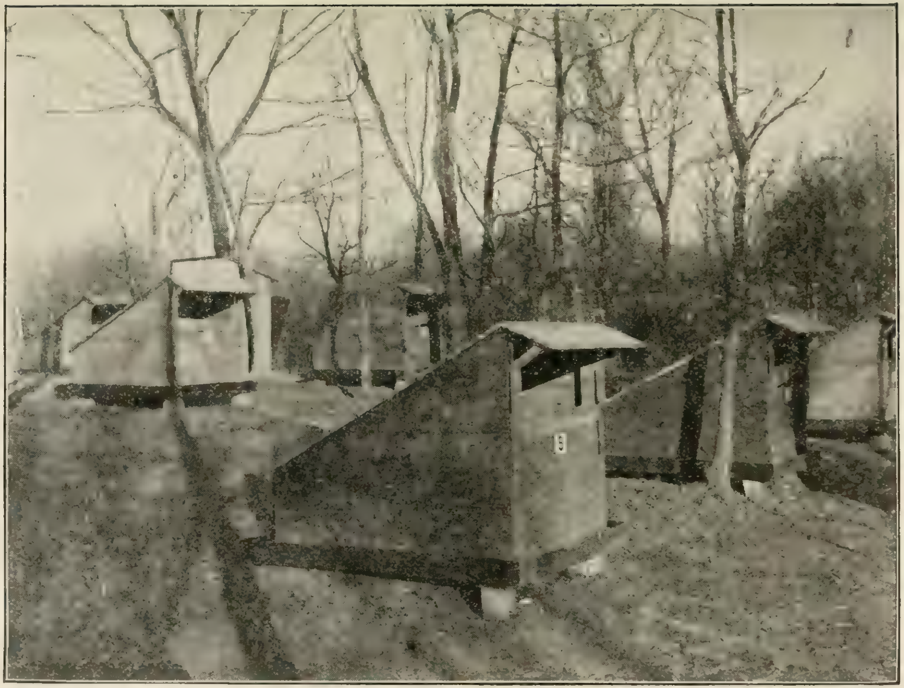
The distinction between anti-bacterial and anti-toxic immunity is an important one. The serum of an animal which has acquired immunity to tetanus, neutralizes the soluble toxin, but does not necessarily injure the tetanus bacillus itself. This is anti-toxic immunity. On the other hand where the serum of the animal is able to destroy or dissolve the bacteria, as in typhoid, it is known as anti-bacterial immunity.

ANTITOXIC IMMUNITY.

Antitoxins are much more stable than toxins. The combination of toxin and anti-toxin is direct and follows the laws of chemical combination. The toxin is composed of two groups, a haptifore or combining group, the other is the toxifore or poisonous group. The haptifore is quite stable while the toxifore group is destroyed at 55 degrees C. or decomposes on standing, but does not prevent the haptifore group from uniting with a suitable antitoxin. It is only when the haptifore group fits to the receptor of the body cell that the toxin can act. As a result of this injury the body cells are stimulated and receptors are given off in excess, and thrust into the circulation. These free cell receptors constitute the antitoxin. If a toxin now enters the body, similar to the one which leads to the production of antitoxin, the haptifore group of the toxin will unite with the antitoxin and prevent the poison from damaging the body cells.

ANTIBACTERIAL IMMUNITY.

In this, two constituents of the specific serum are concerned in its destructive powers, instead of one as in antitoxic immunity. One of these is able to withstand heating to 55 degrees C. and is contained only in the specific serum. The other is destroyed by heating to 55 degrees C. and is contained in the serum of normal untreated animals as well



No. 10. CHECK PENS

as in the specific bactericidal serum. For this reason, if bactericidal serum is rendered inactive by being warmed to 55 degrees C., it can be reactivated by serum from a normal animal. The less stable constituent of bactericidal serum which is found in normal serum is known as the complement. The other which is stable and found only in specific serum is termed amboceptor. The ferment-like action, or digestive action of the complement cannot injure the bacterial cell until the cell has been rendered susceptible to the action of the complement by the amboceptor. The complement which possesses the digestive power decomposes on standing and does not exist in immune serum unless it is perfectly fresh. This explains why bacteria are not dissolved by bactericidal serum after it has stood for some time; also why it may be reactivated by adding a little fresh normal serum, or by injecting it into the living animal. It also explains why a serum may be inactive in test tube experiments and intensely active in the living body, in which it finds the complement necessary for its action.

The amboceptor, or immune body as it is sometimes called, possesses two binding groups, one which attaches to the bacterial cell and the other to the complement of the normal serum, and it is only through the immune bodies that the complement can affect the bacterial cells. Therefore, the immune bodies or amboceptor is the exclusive factor in the specific action of the bactericidal serum.

A great variety of inter-bodies are found in small amounts in normal serum, and in addition a considerable amount of complements. In immune serum, on the other hand, an enormous increase in the amount of specific inter-bodies occurs which constitutes the immune bodies or amboceptors. The complement is not increased by the immunizing process. Only one of the necessary constituents is therefore supplied by the injection of an immune serum, and that is the immune body. The other necessary bodies or complements are found in the animal to be treated.

When hogs have passed through an outbreak of cholera, we speak of natural acquired active immunity. When treated with serum a hog acquires artificial passive immunity. When treated by the serum simultaneous method, the hog has artificially acquired active immunity. Naturally acquired immunity is always active inasmuch as we have seen that the cells of the body must take active part in overcoming the infection.

If immunity in hog cholera is antibacterial, the following would be in harmony. When a hog recovers from infection with hog cholera virus, he will have developed during his recovery, a large number of amboceptors or immune bodies. If he is now treated with a large quantity of virulent blood, the cells of the body would be stimulated to an increased production of amboceptors which would consequently be found in large numbers in the blood; the complement would not be increased. If the serum is now drawn from the animal the complements soon decompose on account of their unstable character, but the immune bodies being quite stable, would remain in the serum indefinitely unless subjected to a high temperature. If the serum is now injected into a hog without subsequent infection, the immune bodies would, in the process of metabolism, be eliminated from the body within a few weeks or months. If the hog became exposed at about the same time by artificial inoculation, or natural infection, the immune bodies would unite with the receptors of the virus, and through the medium of these immune bodies, the complement which is found in all normal serum, would destroy the virus. If the hog had become infected sometime previous so that the virus was present in considerable quantities, the amboceptors or immune bodies which would be contained in an ordinary dose of serum would be insufficient to prepare all of the virus for the action of the complement. Consequently, the use of serum would have very little, if any, effect upon the course of the disease in already affected animals. If the serum is of low potency, that is, containing few immune bodies, and the virus very virulent in the simultaneous method, we would expect unfavorable results. The serum simultaneous method would not be indicated where the opportunities for infection in the natural way are sufficient; and when used, the resistance of the animal, the virulency of the virus, and the potency of the serum should all receive due consideration.

IMMUNE HOGS.

There are two methods by which they can be had. Firstly, by the serum alone method, and exposure to the disease by allowing the subject to associate with hogs affected with cholera after giving him the prescribed dose of serum depending upon his weight. Secondly, the serum simultaneous method. It is the same part as the serum alone method but consists in artificially exposing the subject by introducing two cubic centimeters of blood in the opposite thigh, not necessitating him to associate with cholera hogs. The latter method is faster. We aim to have a supply of immunes on hand at all times for our serum tests.

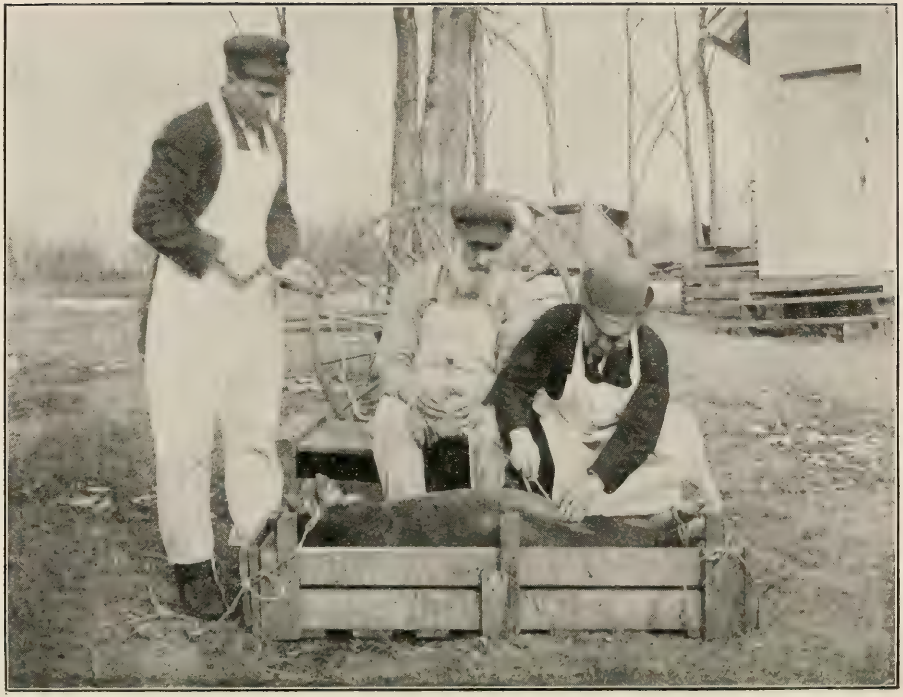
HYPERIMMUNING.

Hog cholera serum is nothing more or less than the defibrinated blood of hyperimmunes with proper antiseptics added for preserving it and consists of a saturated solution of antibodies to antagonize the germ of hog cholera. There are four ways or methods of transforming an immune into a hyperimmune.

1. The quick subcutaneous method.
2. The slow subcutaneous method.
3. The intraperitoneal method.
4. The intravenous method.

THE QUICK SUBCUTANEOUS METHOD.

This method is often used and consists of introducing subcutaneously in the region of the abdomen ten cubic centimeters of virulent blood to the pound of live weight of the immune. For example; an immune weighing 150 pounds should receive fifteen hundred cubic centimeters of virulent blood at one dose to hyperimmunize him by this method. This method often causes leakage through the needle wounds owing to the



No. 11. INTRAPERITONEAL HYPERIMUNIZATION

great pressure produced by the introduction of such great quantities of blood under the skin. Again we have experienced more abscesses from this method than any other; it is also more severe on the hog and sometimes does not seem as sturdy and rugged as when other methods are employed. Though in case of shortage of serum or larger quantities of virulent blood on hand which can be used in the slow method, it can be recommended.

THE SLOW SUBCUTANEOUS METHOD.

This method seems to have the advantage of the quick method in being easier on the hog, causing less abscesses, and can be employed when a shortage of virulent blood is experienced, though it requires a longer time to produce a hyperimmune by this method than by the quick subcutaneous. It is administered in three successive doses of one, two and one-half and five cubic centimeters per pound body weight, from seven to ten days apart. This gives the immune ample time to recover from the transitory effects produced, and he seems to thrive on this treatment. The Iowa State Laboratory has employed this method more than any other. A hog weighing one hundred and fifty pounds would require, by this method, one hundred and fifty cubic centimeters for the first dose, three hundred and seventy-five for the second, and seven hundred and fifty for the third.

INTRAPERITONEAL OR ABDOMINAL METHOD.

This consists of introducing the virulent blood directly into the peritoneal cavity. The dose is the same as that of the quick, subcutaneous. It leaves no enlargements on the abdomen, but one must be cautious in this method to enter the peritoneal cavity without puncturing the bladder. This method is best employed by suspending the immune by his hind legs allowing the abdominal contents to rest on the diaphragm, then inserting the needle through the wall of the abdomen about two or three inches below the anterior border of the pubis and an inch or two to the side of the median line to avoid puncturing the bladder.

INTRAVENOUS METHOD.

The virulent blood by this method is introduced directly into the venous circulation via the ear vein at one dose. It requires five cubic centimeters per pound body weight of the immune to produce a hyperimmune and has the same advantage that the slow subcutaneous method has because it can be employed when there is a scarcity of virulent blood. We have experienced some difficulty at the Iowa State Laboratory with this method being unable, at all times, to enter the vein. The ears of some hogs are very coarse, and the vein scarcely visible. In such subjects, we advise some other method be employed, though when possible use the intravenous method as it has been said that the serum produced by this method is, if any different from that of any other methods, a trifle more potent. An immune weighing one hundred and fifty pounds should receive seven hundred and fifty cubic centimeters of virulent blood by this method.

METHODS OF RESTRAINING HYPERIMMUNES.

The Iowa State laboratory employes crates to restrain the immunes during the process of hyperimmunization for the quick and slow subcutaneous methods. Three different sized crates are used to handle hogs weighing from one hundred to three hundred pounds. For the intravenous method, we have found the crate impracticable and place them on the table. For the intraperitoneal method, we suspend them by the posterior limbs.

The crate is composed of two sections, the division line dividing the crate into upper and lower halves with a trough in the upper section which the hog rests in while being treated. The two halves of the crate are firmly coupled together by means of hooks. After crating the hog, ropes are placed on the front feet drawing the ropes up and over the outside of the upper half of the crate through the division line of the upper and lower section. The ropes are now tightened so that the front feet are drawn from the floor of the crate to the division line separating the upper and lower section, and the two ropes firmly tied together on top of the crate. The crate is now turned upside down which places the immune on his back in the upper section with his front feet firmly tied down; the lower section is now uncoupled and removed and the posterior limbs tied to the corners of the crate, and the hog is firmly held while the treatment is being administered. We have found this a most satisfactory way of handling our immunes for quick and slow subcutaneous methods of hyperimmunization.

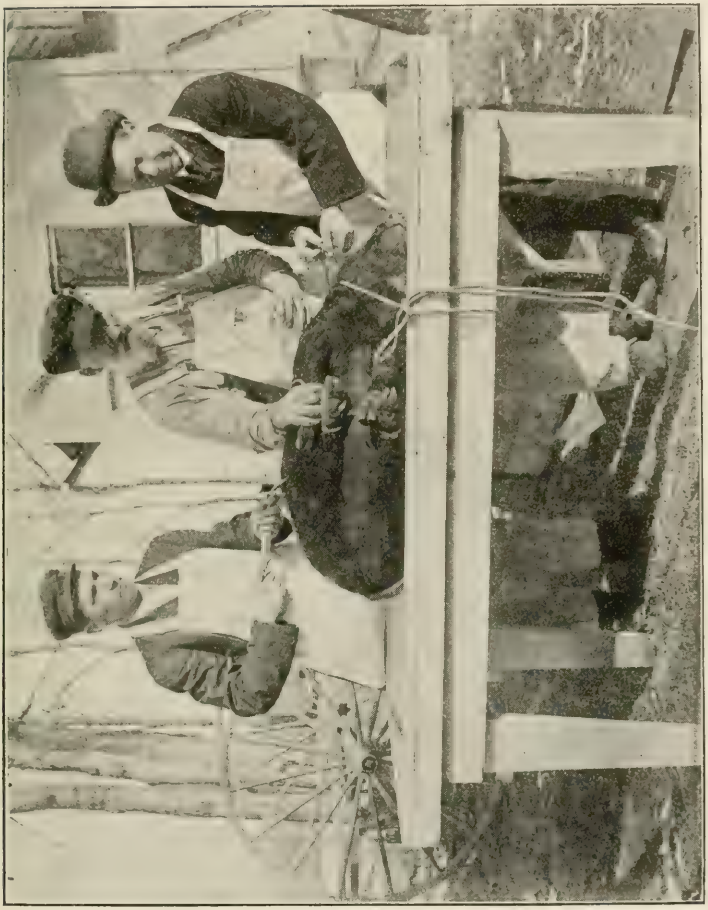
REHYPERIMMUNIZATION.

Rehyperimmunization is often employed to save time and money in the production of serum and can be used regularly if the demand for serum does not necessitate the killing of the hyperimmune at the fourth bleeding. It consists in retreating the hyperimmune one or two days after the fourth tail drawing, with one half the amount of virulent blood primarily used to hyperimmunize him as in the quick and slow subcutaneous or peritoneal methods, it would require only five cubic centimeters per body weight. In the intravenous method, two and one-half cubic centimeters per body weight is sufficient.

The Iowa State Laboratory employs this practice of rehyperimmunizing on all fit subjects; the one requisite being length of tail. This enables us to obtain seven tail drawings, four before rehyperimmunizing and three after, beside the final carotid drawing.

BLEEDING OF HYPERIMMUNES.

Ten days after hyperimmunizing, we take the first tail drawing and repeat this every seven days for two successive times and the fourth drawing the hog is killed by bleeding from the carotid, but if we wish to rehyperimmunize, the fourth tail drawing is taken and in one or two days the hog may be rehyperimmunized. Then in ten days, the fifth tail drawing is taken and at intervals of one week the sixth and seventh are drawn, and one week later the eighth drawing is taken from the carotid artery, and the animal killed.



NO. 12. HYPERIMMUNIZING—EAR VEIN METHOD

The amount taken at a bleeding varies as some hogs would stand the loss of blood better than others. We aim to extract five cubic centimeters per body weight at each tail drawing, though in one case we took as high as ten cubic centimeters, and have experienced difficulty in drawing five cubic centimeters per body weight in others. The hogs that are being bled for serum should receive nourishing food and good shelter. The blood as it is drawn into sterile jars is defibrinated by shaking or stirring with a sterile glass rod and one-half of one per cent phenol added as a preservative. The serum from each hog is kept separate in a large bottle until the hog is killed, and each drawing is labeled on the bottle with date the drawing was made. This is done to avoid mixing any serum from hogs that upon post morten show lesions of any disease, such as tuberculosis.

CRATES.

Crates are also used in bleeding hyperimmunes as well as in producing hyperimmunity at the Iowa State Laboratory; for the latter we have described the crate; for the former, the crate is of simple type, differing in no way from an ordinary hog crate. After securing the hyperimmune in the crate, the end gate is removed and the hog retained in the crate by suspending his hind quarters in a sling, thus preventing the hog from backing out of the crate. A cloth is placed over the crate with a small hole through which the tail is placed making conditions as sanitary as possible.

THE TESTING OF SERUM.

All serum before it is bottled for shipping is tested to determine its potency, waiting until we get the entire bleeding of five or six hogs, and mixing it in a five gallon sterile container. Approximately speaking, we test the serum in one thousand dose lots. From this mixture, we treat six shoats weighing one hundred pounds each, three receiving twenty cubic centimeters, and the other three receiving fifteen cubic centimeters of the mixed serum, and at the same time in the opposite thigh, two cubic centimeters of virulent blood is introduced; also using the same virulent blood on two shoats without the preventive serum to test the virulency of the cholera blood. If the latter, or check, as they are often called, succumb to the disease, and those with the preventive serum live, we are justified in considering the serum potent, and if used under proper conditions in outbreaks of hog cholera, will aid in checking the spread of the disease. It, however, should never be used on hogs showing symptoms, as it is then too late, for it possesses no curative properties to speak of in limited doses, and therefore should be confined to hogs that have recently been exposed but which show no symptoms.

BOTTLING.

After waiting about twenty days, if our test hogs are healthy and appetite good, and the check hogs are dead, we bottle the serum.

METHODS OF IMMUNIZING AND PREVENTING OUTBREAKS OF HOG CHOLERA.

First. Serum Alone. Method. This consists of using the preventive serum alone and should be employed in outbreaks or upon exposure of the herd before they show symptoms of the disease. If the exposure is not present or subsequent to the use of the serum alone method, the immunity is only temporary or passive nature, lasting possibly two months. This method, therefore, should be employed in outbreaks upon hogs which show no symptoms. It is often used by men who ship hogs to state fairs or exhibitions to tide them over the period of travel and avoid any infection to which they might be submitted in cars or stock yards. In chronic cases of hog cholera, the serum does not give reliable results, showing again the serum is a preventive, not a curative.

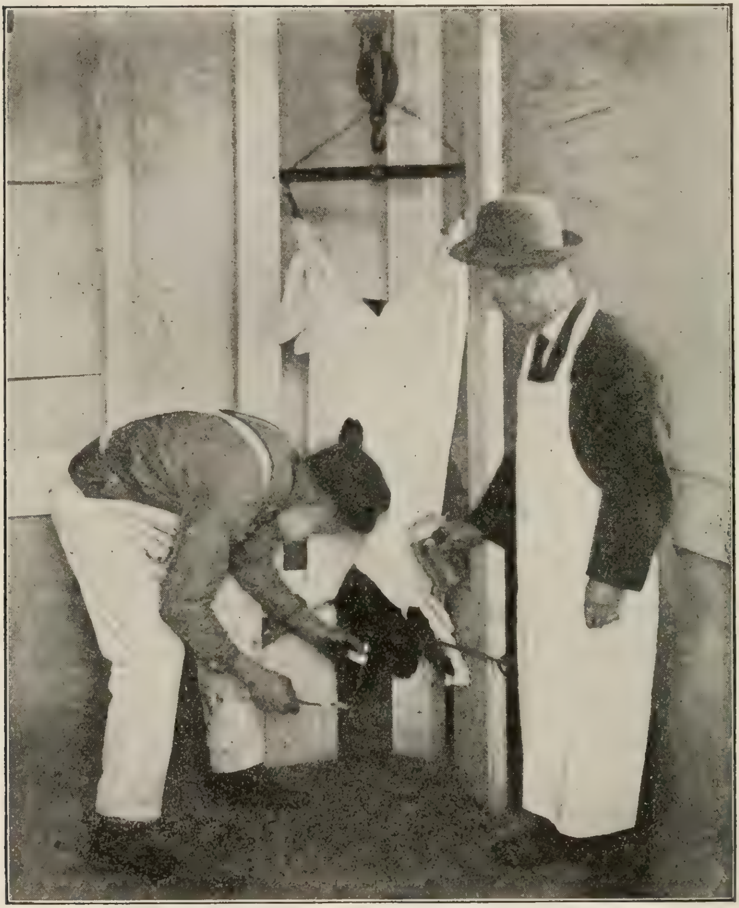
Second. Serum Simultaneous Method. This method requires the same dose of serum, but in conjunction with it a small amount of virulent blood is used, being injected into the opposite side. This method is employed when the disease or exposure is not present and produces a permanent active artificial immunity. This method has been questioned by some in the past, but it seems to be coming into prominence on account of the longer period of immunity produced by this method. Some stations employ this method almost exclusively.

CHOLERA BLOOD FOR HYPERIMMUNIZING.

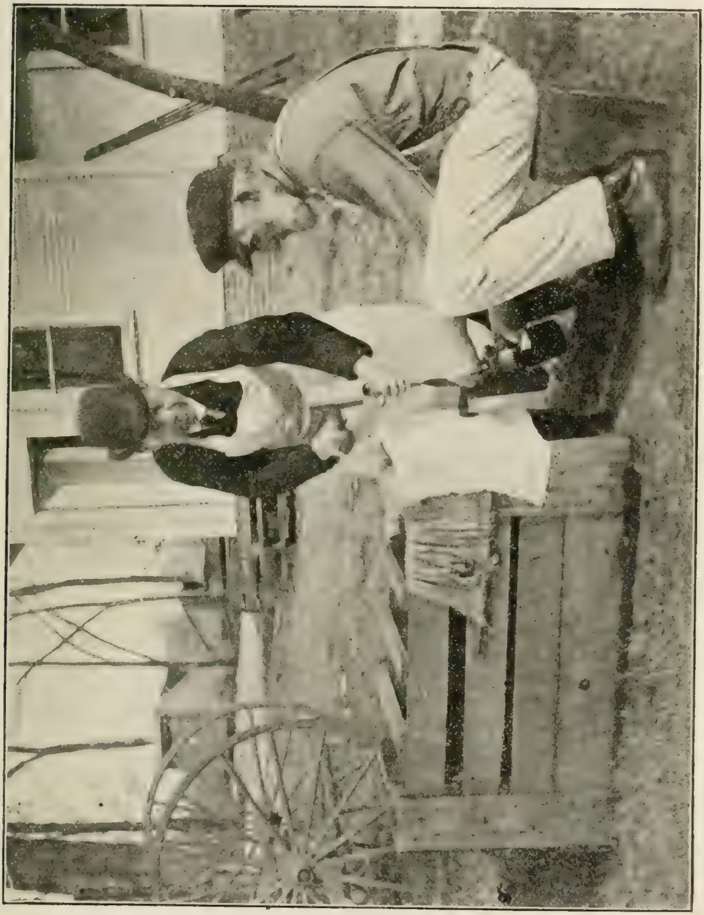
After years of work and experimentation, Drs. Dorset and Niles of the United States Bureau of Animal Industry put forth an anti-hog cholera serum, which proved its efficiency in preventing and controlling outbreaks of hog cholera. The state experimental station, and live stock sanitary boards have taken up this work in the different states, and are now producing hog cholera serum by the Dorset-Niles method.

The cultures of the specific organisms of hog cholera cannot be produced in the laboratory, but instead the fresh blood from cholera hog is used. This is drawn under sterile conditions a few hours before death. Shoats weighing from sixty to one hundred pounds are used for this purpose. They receive five cubic centimeters of the virus subcutaneously into the muscles of the inside of the thigh. In from eight to fourteen days, providing the hog is susceptible, and the blood virulent, the hog will develop acute hog cholera. Just before death, the blood is caught in sterile jars under antiseptic precautions, by bleeding from the carotid artery. The blood so drawn is defibrinated, and used immediately for hyperimmunizing purposes after examination of the dead carcass to ascertain the lesions of cholera present.

In our work at the Iowa State Laboratory, we have carried on at times experiments with sodium citrate in the virulent blood as a defibrinator to eliminate the process of stirring and pressing out the clot. As yet, we point favorably to its use. Our work with sodium citrate was carried out in this way. To one-half of the blood drawn from a cholera shoat, we would add sodium citrate, and to the other half we would remove the clot by stirring and pressing, using a small fruit press. With this blood all from the same shoat, but one part having sodium citrate, we made eight



No. 13. FINAL OR COROTID BLEEDING



No. 14. TAIL BLEEDING

checks and no difference could be noticed as they all became sick the same time and showed good lesions of hog cholera. The sodium citrate enables us to save between fifty and one hundred cubic centimeters in each cholera shoat by eliminating the clot, not speaking of the time saved. We used five cubic centimeters of a ten per cent solution of sodium citrate to one hundred cubic centimeters, and experienced no clotting, this was always placed in the jar before the blood was drawn, and necessitates an expert judgment as to the quantity of virulent blood the cholera shoat will produce. Several tests were made using the citrate in the virulent blood with no indications of reducing the virulency, but increased the quantity drawn and also saved time.

As yet we have seen no reason why it cannot be used to advantage in the virulent blood. The following is one of the experiments; we could quote many, but they all ran about the same and deem one sufficient to illustrate our point:

TEST ON SODIUM CITRATE IN VIRULENT BLOOD.

Hog No.	Description	Date Killed
141	Black boar, wt. 70 pounds	Sept. 22, 1910
150	White boar, wt. 60 pounds	Sept. 21, 1910

On Sept. 14, 1910, each received five cubic centimeters of virulent blood subcutaneously defibrinated with sodium citrate from cholera hogs No. 138, pen No. 2.

151	White sow, wt. 70 pounds	Sept. 20, 1910
146	Black sow, wt. 60 pounds	Sept. 23, 1910

On Sept. 14, 1910, each received five cubic centimeters of virulent blood defibrinated with sterile rods by beating and stirring from cholera hog No. 138, Pen 2.

In conclusion the results of the serum used by the hog raisers have been all that could be expected in most cases, though in one case contrary results were obtained. This does not, however, offset the successes of the serum treatment.

The appropriation has been inadequate to carry out our work completely though we have done much good. The serum at the present price of fifty cents per dose is above the reach of many farmers, and until an appropriation is made to support our work on a larger scale, the price should remain at fifty cents in order to make the laboratory self-sustaining, but this deprives many hog raisers of its benefits.

PART XI

PAPERS ON LIVE STOCK, AGRICULTURAL AND MISCELLANEOUS TOPICS

FROM

BULLETINS, AGRICULTURAL PRESS

AND

Papers Read Before County Farmer's Institutes

ALFALFA.

THE SEED BED AND SEEDING.

BY H. D. HUGHES

Iowa Agricultural Experiment Station, Ames.

Alfalfa can be grown successfully on nearly all Iowa soils, providing that proper methods are followed. The fact that a few men have not succeeded with the crop in their first attempt should not discourage any, as the per cent of failures is probably not much greater than the per cent of failures in securing a stand of crops with which we are thoroughly familiar, such as red clover, timothy, etc. Inquiries recently made by the Iowa State college indicate that alfalfa is producing large yields of hay of the finest quality on almost every soil in the state.

Alfalfa has been successfully grown on the college farm and on the experiment station fields for a number of years. Two fields which are still in alfalfa this season may be mentioned as indicative of what may reasonably be expected.

On the college dairy farm a field of 7½ acres was seeded in August, 1908. In 1909 and again in 1910 three cuttings were made with a total yield of 5½ tons per acre each year. In 1910 the field also gave considerable pasturage. This season the first crop was cut on June 12th with an average yield of 2¾ tons per acre for the whole piece.

A plot on the far crops experimental fields, seeded August 18, 1908, gave three cuttings with 5.25 tons per acre in 1909, three cuttings with 5.15 tons per acre in 1910, and the first cutting this year gave 2.25 tons per acre, of field cured hay.

During the past season a number of farmers have been conducting co-operative experiments with the Iowa experiment station in order to determine what methods should be employed in order to secure the best results. These men are located in almost every section of the state, and dealt with all sorts of soil conditions, yet wherever the most approved methods were followed, without exception, excellent stands were secured and the yields thus far this season have been very satisfactory. While the results of these tests, together with other alfalfa investigations are reported in a bulletin soon to be issued by the station, they may be briefly stated here for the benefit of those who contemplate putting in alfalfa this fall.

SOIL.

Because of the large and very rapid growth made by the alfalfa plant, it is essential that it shall have a large supply of readily available fertility. It is necessary therefore that alfalfa should be seeded on soil rather above the average for the best results. Most good corn land when properly handled, will grow alfalfa successfully, providing that it is well drained and sweet.

DRAINAGE.

It is useless and unwise to attempt to grow alfalfa on land which is not thoroughly well drained, either naturally or by the use of tile or ditches. Some of the best results have been secured on bottom lands as these are likely to be quite fertile, but no matter how much available fertility is present, an attempt to grow alfalfa without good drainage is almost sure to result in failure.

Many fertile upland soils are not suitable for alfalfa growing, owing to the presence, too near the surface, of a compact, tenacious subsoil so impervious to water as to prevent proper drainage.

MANURE.

While good stands and yields of alfalfa have frequently been secured on fertile soils without the aid of manure, yet these yields are in almost every case largely increased by it. On soils which are only medium in fertility, manure is essential to success, and on soils below the average in fertility, successful stands are practically never secured without its liberal use. The use of manure is by far the most important factor in securing successful results with alfalfa on Iowa soils.

Ten to twelve tons per acre of well rotted manure should be applied before plowing for alfalfa.

PREPARATION OF THE SEED BED.

To insure the best possible stand of alfalfa, the land chosen for the crop should be plowed in the spring following the application of the manure, and worked down into good condition at once. The field should then be harrowed or disked at least every two weeks in order to insure germinating and killing as many of the weed seeds present as possible, and also to conserve the moisture.

It is not necessary however, to give up an entire season to securing a stand, though this is the surest method. Manure may be applied and the land plowed immediately following the cutting of winter wheat, or a first year crop of red clover or oats cut early for hay. When this treatment has been given as soon following the removal of the crop as possible, it has almost never failed to give good results, even though the summer be rather dry.

The necessity of thoroughness in this preparation, however, cannot be over emphasized. Unless the land is prepared early in the summer and then a good mulch maintained, there will be great danger of an insufficient supply of moisture to insure germination. Then again alfalfa will not fight weeds, and unless the soil is stirred often, in this way bringing the weed seeds to the surface and germinating them before the alfalfa crop is put in, difficulty and possible failure is the result. Further, while the surface soil should be very well fined and oose, the subsurface should be rather compact. Late and insufficient preparation means a loose seed bed with more drying out, and then in the winter great danger from heaving, with the loss of the whole crop as a result.

THE USE OF LIME.

If the soil is at all acid, to grow alfalfa it will be necessary to apply from 1,000 to 2,500 pounds of lime per acre. The poorer and more worn soils are most likely to be acid, in which case the use of lime is essential. Even on the more fertile soils its use has usually resulted in a more vigorous and healthy growth. Lime in the form of fine ground raw limestone is much to be preferred, owing to its cheapness as well as to its effect upon the soil. The soil may readily be tested for acidity by taking thoroughly moistened soil from a few inches below the surface and pressing it, as into a ball, about a piece of blue litmus paper. If after ten or fifteen minutes the paper is found to have changed to a distinctly pink color, one may be reasonably sure that the soil needs lime. Otherwise lime is probably not needed. Litmus paper can be secured at almost any drug store.

INOCULATION.

The results of numerous and wider tests indicate that most of our soils probably contain the alfalfa bacteria which are essential for continued success with this crop. While these bacteria are probably not present in so large quantities as could be desired, their rapid multiplication is apparently much aided by a liberal use of manure.

On soils which do not naturally contain these bacteria it is absolutely essential that they be introduced. This inoculation may best be secured as follows:

Just before seeding, scatter uniformly on the piece, from 150 to 300 lbs. per acre, of soil secured from a field where alfalfa has grown vigorously and where the plants produced in abundance tubercules on their roots. Where this is not to be had, soil from a sweet clover patch may be used.

This soil should not be exposed to the sun any more than necessary, and may well be applied toward evening and harrowed in thoroughly at once as the direct rays of the sun soon kill the bacteria.

As there is no way of determining whether these bacteria are present in a given soil without attempting to grow alfalfa, the only safe way is to inoculate, since if they are not present failure is almost certain. A small area may be seeded and inoculated the first year, from which soil may be secured for larger areas in following seasons.

SEEDING.

Seeding of alfalfa should best be done from the 10th to 20th of August, though success may be had from seeding a few days later than this, provided that other conditions are favorable. The earlier seeding is, however, to be preferred providing there is a sufficient amount of moisture in the soil to germinate the seed.

The seed should by all means be put in with a drill when this is at all possible, and should be placed from ¾ to 1½ inches below the surface. In order to get the most uniform stand it is often advisable to go over the field twice, putting in one-half of the seed each time and crossing the field the second time over. If it is impossible to secure a drill the seed may be applied broadcast and harrowed in well, or even disked in. This may well be done towards evening when any moisture in the surface soil will help to secure germination.

SEED.

Only seed that is of the best quality should be used. Most seed companies handle several grades, varying much in quality, purity and germination. Samples and prices may well be secured from several seed companies, and then the best selected. The college stands ready at all times to test free of cost any samples of seed for impurities and germination.

In order that farmers may know from personal experience something of the possibilities of this crop, several of the larger seed companies have offered, at the suggestion of the college, to supply at reduced prices enough seed for one acre (20 lbs.). This seed will be furnished in these small amounts at a little below the rate usually asked for it when ordered in larger quantities. Any person ordering more than twenty pounds will pay the regular market price for the balance. Farmers taking advantage of this special offer should indicate this to the company from which ordered, to insure that the desired quality of seed will be sent. This seed has been examined by the college and is known to be the very best.

CO-OPERATIVE TEST.

The college is now planning to undertake a few more co-operative tests this fall in certain sections of the state, in order more fully to represent all soil and climatic conditions. An outline of this experiment and full information regarding it will be sent upon request to those interested. While all cannot be accommodated under this arrangement, the outline will no doubt be helpful in indicating ways of determining the treatment necessary for the best results, on any particular soil.

SUGGESTIONS FOR BEGINNERS IN ALFALFA CULTURE.

A. T. WIANCKO, CHIEF IN SOILS AND CROPS.

Agricultural Experiment Station, Purdue University.

INTRODUCTION.

There is now no longer any doubt concerning the adaptation of alfalfa to Indiana conditions. Its high feeding value and its ability to produce large yields are established facts. Many farmers in various parts of the state are successfully producing large areas of it. In every neighborhood the interest in its production is becoming more and more marked and the time is not far distant when this valuable forage crop will play an important part in Indiana agriculture.

As with all crops that are new to the farmer or to the local conditions, there is much to be learned about alfalfa before it can be successfully produced. The nature of the plant must be carefully considered and its habits of growth, its needs in the way of plant food, the soils best suited to it, and its cultural requirements must be understood. Without such knowledge much disappointment is likely to result, and no one should attempt to raise alfalfa without first making a thorough study of the subject.

Recognizing the value of the crop and its possibilities for better agriculture, this station began experiments with it a number of years ago with the purpose of finding out its cultural requirements. In recent years these experiments have been conducted in large numbers throughout the state, on all the principal soil types and in practically every county. As a result of these investigations, there has been collected a large amount of valuable information concerning the requirements of alfalfa, its behavior under different surroundings, and the best methods of dealing with it.

This circular is prepared with a view to answering the more important of the many questions that come to the station from farmers desiring to try this crop.

SOILS FOR ALFALFA.

Many people make the fatal mistake of expecting alfalfa to do well on soils that are not fit to properly produce any kind of a crop. There is just as much need of care in selecting and preparing soils for alfalfa as for any other crop and probably more, because of its deep rooting habits and large plant food requirements.

Deep, loamy soils with open subsoils are undoubtedly best for alfalfa, but there is plenty of evidence to show that it may be successfully produced on almost any type of soil, from light sandy or gravelly loams and mucks to heavy clays, providing that they are well drained, sweet and properly supplied with available plant food. In 348 trials conducted by this station during the last five years, 68 out of 83 clays, 167 out of 188 loams, and 69 out of 77 sandy soils gave satisfactory results. Failures seemed to be due to factors other than the types of soil.

Many soils that at present are not fit for alfalfa culture may be made so by providing drainage facilities, correcting acidity, adding organic matter, or supplying needed plant food, according to the requirements. Good drainage is essential in order that the roots may go deep into the soil. Hardpan must be broken up or avoided altogether. Soils that are sour may be made sweet by thorough drainage and the application of lime. A good supply of decomposable organic matter in the soil helps the bacterial action in making plant food available, facilitates the inoculating process, and together with good drainage prevents heaving in the spring.

Muck soils may be used for alfalfa if they are well drained and properly supplied with mineral plant food. Potash is nearly always lacking in these soils and often phosphoric acid and lime must also be supplied. Soils that are subject to flooding are not good for alfalfa.

SOIL FERTILIZATION.

Alfalfa requires large quantities of plant food and cannot be expected to do well on poor soils. Its deep rooting habits may enable it to extract more food from the soil than most other crops, but to secure large yields there must be an abundance of food within easy reach and if the soil is not naturally well supplied, manure or commercial fertilizer must be added. After it is thoroughly established and properly inoculated with its nitrogen gathering bacteria, alfalfa will supply itself with nitrogen from the air, but all potash, phosphoric acid, and other mineral food must come from the soil and as the crop is naturally a large producer, large quantities are required. Of the plant food that must come from the soil, potash and phosphoric acid are most largely required and these are the two substances in which the soil is most likely to be deficient. Every ton of alfalfa hay which is removed from the land takes with it about 11 pounds of phosphoric acid and 49 pounds of potash.

Every alfalfa field should be started with a liberal dressing of stable manure, if possible. Experiments have proven time and again that manure is unusually valuable in starting alfalfa. It not only supplies plant food but improves the physical condition of the soil and facilitates the inoculating process. In many of the experiments conducted by this station, special inoculation of the soil was found unnecessary when plenty of manure was applied.

When sufficient manure is not available and the soil is not already rich, a high grade commercial fertilizer should be used. Just what will be required will depend upon the character and condition of the soil. In most instances, however, it will be well to use a fertilizer rich in both phosphoric acid and potash. A mixture containing a little nitrogen, perhaps 2 per cent, and 8 to 10 per cent of phosphoric acid and the same of potash, applied at the rate of three or four hundred pounds per acre will be sufficient unless the soil is quite poor, in which case heavier applications may be profitable. The fertilizer should be disked into the ground some time in advance of seeding.

LIMING SOILS FOR ALFALFA.

To what extent Indiana soils are in need of liming in order to successfully produce alfalfa is not definitely known. It is known, however, that alfalfa will not thrive in soils that are sour and that there are many such in the state. In some of the experiments conducted during the last few years, liming has been found to increase the yields of alfalfa, while in other cases the lime produced no apparent effect.

Soils that produce good crops of clover will probably not be seriously in need of liming for alfalfa. On the other hand, where there is trouble in getting a stand of clover, or where this crop does not otherwise succeed well, it will usually pay to lime the soil, and liming may be actually necessary before alfalfa will do well, because the alfalfa bacteria will not thrive in acid soils.

In the case of soils that are sour because of lack of drainage, liming alone will not be sufficient. Drainage must receive first attention. The soil must also be otherwise put into good physical condition by proper tillage methods, the addition of humus, etc. After these things have been attended to, if the soil is in need of lime this substance can do its work properly.

The most satisfactory method of determining whether or not a soil is in need of liming, is to make a small trial application of lime on a patch sown with alfalfa, some time before seeding the whole field. Such an experiment may result in saving the expense of liming and is well worth making, where there is serious doubt, because in many instances there is a sufficient natural supply of lime in the soil. In some portions of the state where there is an abundance of limestone, the soils may, nevertheless, respond to applications of lime because they bear no direct relation to the rock upon which they rest.

Where liming is necessary, an application of ground limestone will usually be most economical, although other forms of lime will give equally good results. The amount that should be applied will depend upon the needs of the soil, but probably not less than two tons of ground limestone per acre should be used, and double this amount may be profitable. It may be applied at any time but the longer before sowing the alfalfa the better. It is a good plan to begin preparing the ground for alfalfa a year or so in advance and in that case the lime may be applied when preparing the soil for the preceding crop. If the ground for alfalfa is to be plowed in the fall, the lime may be applied at that time. In spring preparation, the lime should be applied immediately after plowing and disked into the soil so as to give it as much time to act as possible before seeding.

THE TIME TO SOW ALFALFA.

If the weather conditions are favorable and the soil is in good condition and free of weed seeds, it does not seem to make any important difference when the seed is sown so long as there is sufficient time for the young plants to thoroughly establish themselves before winter, and good results may be secured at any time from April to August. Trouble with weeds is most likely to arise with the earlier seeding, while with the later seeding there is liable to be an insufficient supply of moisture in the soil to permit of proper soil preparation, and the germination of the seed and the development of the plants may be seriously delayed by periods of drought. In the experiment station's trials with late summer seeding during the last five years, periods of drought have been occasionally encountered in different parts of the state, which have more or less seriously interfered with getting a satisfactory stand or a sufficient amount of growth before winter. To insure success, it therefore, seems wisest to sow somewhat earlier. Seedings made in April or May, on the other hand, are so liable to be troubled with weeds that such early seeding is not advisable, even with the use of a nurse crop, unless the ground is known to be free of weed seeds. On this point we would especially caution farmers, as few realize how full of weed seeds the soil really is. *Trouble with weeds has caused more alfalfa failures than any other one thing.*

On account of the danger of trouble with weeds in spring seeding and the liability of interference by drought in late summer seeding, it is undoubtedly safest and best, where it can be done, to spend the spring in ridding the ground of weed seeds and then sow the alfalfa alone about the end of June or early in July. In this case the ground should be plowed in the spring, turning under some manure if possible and then harrowed every ten days or two weeks until seeding time. Each successive harrowing will kill the weeds that have started and put a fresh lot of seeds in position to germinate until, finally, all weed seeds near enough to the surface to grow will be sprouted and killed.

When spring seeding is to be practiced, a light seeding of oats or beardless barley, about a bushel and a half per acre, may be used as a nurse crop. This nurse crop should usually be cut for hay soon after heading and removed from the field. With summer seeding a nurse crop should not be used.

PREPARING THE SEED-BED AND KILLING WEEDS.

Preparation of the soil for alfalfa should usually be begun with the preceding crop, applying any needed lime at that time. What the preceding crop is does not seem to be important so long as it will permit of thorough soil preparation for the alfalfa. A corn crop which can be given clean culture will usually be best, though for summer seeding any spring sown crop which can be removed early in the summer may be used. Early potatoes, peas for canning, clover and small grain crops can all be used to precede summer sowing. In any case, a fine, mellow seed-bed with a firm sub-surface should be prepared and weed seeds killed by repeated harrowing, as directed in preceding paragraphs. Extra deep plowing is not advisable. Where alfalfa is to follow peas or early potatoes, a good seed-bed can usually be prepared without plowing.

METHOD AND RATE OF SEEDING.

Probably the best method of sowing alfalfa seed is with a drill, as by this means it may be covered most uniformly. When a nurse crop is sown with it, as in the case of spring seeding, the alfalfa seed should be put into the grass seed attachment and dropped ahead of the drill shoes. In the case of summer seeding, without a nurse crop, drilling the same as wheat, with the drill set to run as shallow as possible, will usually be best. If the drill cannot be adjusted to sow small amounts, enough coarse corn meal may be mixed with the alfalfa seed to increase the quantity so that the drill will handle it properly. When drilling is not convenient, the seed may be sown broadcast and lightly covered with a harrow.

The rate of seeding should be about 20 pounds per acre.

INOCULATION.

To get the most out of the alfalfa crop and, in fact, before it can make its best development, the roots must be inoculated with the proper nodule forming, nitrogen gathering bacteria. In the majority of cases where alfalfa is sown for the first time, it will need to be inoculated by some artificial means. The surest and most practical way to do this is to broadcast and harrow in, before sowing the seed, some earth from a good alfalfa field where the bacteria are known to exist. At least two or three hundred pounds of soil per acre should be used. In securing this soil, care should be taken to secure it from a clean, healthy field so as to avoid the introduction of weed seeds or plant diseases. Care must be exercised, also, to guard against exposing the soil for inoculation to sunlight for too long a time before sowing and harrowing it in as such exposure is detrimental to the bacteria. Inoculation may also be effected by mixing and drilling in with the alfalfa seed a small quantity of soil rich in bacteria, but the success of this method is not fully established. The use of pure cultures of alfalfa bacteria has not been generally satisfactory, and probably because, with present methods, the bacteria are either dead before they reach the farmer or he is not sufficiently careful in their application. Some farmers are successfully inoculating their soil for alfalfa by sowing some alfalfa seed with clover a year or two before sowing alfalfa alone.

CLIPPING YOUNG ALFALFA.

The information we have concerning the clipping of alfalfa during the first season is too contradictory to permit of formulating any general rule. It seems, however, that clipping has sometimes been overdone and that young alfalfa should rather be allowed to grow undisturbed so long as it is doing well and does not bloom. In the case of early seeding, one clipping late in the summer will usually be sufficient. Generally speaking clipping should be practiced only when the growth seems checked, or the tops of the plants turn yellow. If not too heavy, the cut material should be left on the ground to act as a mulch. In the case of summer seeding, all growth should be allowed to die down naturally for protection over winter.

CUTTING FOR HAY.

When alfalfa is used for hay it should be cut whenever the new shoots at the crowns of the plants are well started. This is a better guide as to the proper time of cutting than the appearance of blossoms. Whenever the tops turn yellow, or the leaves become seriously affected by "leaf spot" it should also be cut, even though the fresh shoots have not started.

PASTURING.

Alfalfa should never be pastured the first season, and in most cases it will be best to use it for hay-making during the second season, in order that it may become thoroughly established before animals are allowed to tramp over it. It should never be pastured closely, as this injures the crowns of the plants. Horses and sheep are more likely to do damage in this way than are cattle or hogs. With cattle and sheep, care must be exercised to avoid bloating. At first the animals should be turned in for only a short time each day, and when the alfalfa is wet with dew or rain there is still greater need of care to avoid bloating. It is wise to be a little more careful than with clover.

SUMMARY.

Alfalfa may be successfully raised on almost any type of soil providing that it is well drained, free of weeds and in a reasonable state of fertility.

Good drainage must be provided.

The ground must be made free of weed seeds.

Soils lacking in fertility should be well manured, as alfalfa requires large amounts of plant food. If sufficient manure is not to be had, it should be supplemented with a commercial fertilizer rich in phosphoric acid and potash.

If the soil is sour, it must be limed before alfalfa can do well.

Inoculation of the soil will generally be necessary.

THE TIME TO CUT ALFALFA.

(BREEDERS GAZETTE.)

There are today a multitude of men with their first crops of alfalfa on their hands, wondering when it ought to be cut. I am assured that to know when to cut alfalfa after one gets it is absolutely essential to one's success. Half the novices hurt or ruin their alfalfa by ignorance of this thing.

Never cut alfalfa until it is ready to cut. Alfalfa cut too early is very seriously injured, receiving a setback from which it may not recover for some weeks. Why this is true we do not know, nor does it matter since it is an indisputable fact. Sometimes alfalfa cut too soon is almost killed outright. This is more apt to be true of the second or third cutting than of the first, but it is true also of the first cutting. Do not pasture alfalfa in the spring before it has reached near to the blooming time. This is a rule that, if observed, will immensely conserve the alfalfa and result in the least possible loss of animals as well.

When you suspect that the alfalfa may be ready to cut, when it has begun to show bloom, get down on your knees in the field and, parting the stems look closely at the bases of them to see if small shoots have started that are to make the next crop. If these shoots have not started delay your cutting until they do start. If they are an inch long start the mowers. The crop should be all cut before these shoots are long enough so that they will themselves be cut off by the mower. For that reason once one finds his alfalfa ready to cut he should hurry the work as much as possible. I. O. O'Donnell of Montana cuts down 400 acres at one time when the alfalfa is ready for cutting, but he has a rainless climate in which to get up the hay and much facility for getting it up rapidly. Do not delay long to cut when the time is ready, even though the weather may seem dangerous. There is no great amount of difference between seasons of summer so far as liability to rain is concerned. One is as apt to get rain in one week of June as another. Commonly in the cornbelt one should cut his alfalfa the first day of June or possibly a few days later or earlier.

There is no fixed rule of haymaking because weather changes so much. The one principle of almost invariable practice is to rake before the leaves are dry enough to shatter. Then one can cock in small cocks, as high as convenient, and let some curing take place in the cock. Rain will hardly penetrate this cocked hay if it is raked while yet tough and green. Do not rake too green, just before the leaves would drop. Afterward, say next day at 10 o'clock, open the cocks in three or four or more pieces and spread to the sun. The hay will then rapidly dry and it can soon be put in the barn or stack. That, very briefly, is the way we have found the best in the eastern states where showery weather prevails and hay is worth enough to justify some expense in its saving. The use of haycock covers is good and I know men who like them much. They are made from good cotton cloth or light duck. If they are 42″ to 48″ square they will be large enough. They are best held in place by use of cement weights moulded into balls as large as baseballs in which the corner of the fabric enters. A hole as large as a silver quarter through the cloth will prevent the cement weights from slipping off. The main difficulty with covers is the caring for them when not in use, and the labor of drying them when wet.—JOSEPH E. WING.

FILLING THE SILO.

BY W. J. KENNEDY.

Iowa Agricultural Experiment Station, Ames.

The problem of filling the silo for the first time is going to confront more farmers this year than ever before. Thousands of men are asking these questions: When should the corn be cut? What length should the corn be cut? Should the silo be filled rapidly or slowly? How should the corn be distributed and packed? Should water be added during the filling? How should the cracks or other air spaces be filled? What is the best way to prevent waste on the top of the silo? What does it cost per ton to fill the silo? How soon after filling is the silage fit to use?

In attempting to answer some of these questions the author, in addition to drawing upon his own personal experience of many years with silos, has consulted all of the leading experiment station workers, who have had silo experience, and in addition many of the leading beef producers and dairymen. The answers brought out many points of interest. Chief among them was a marked tendency on the part of the beef producers to advocate a more mature corn at filling time than in the case of the dairymen.

TIME TO CUT CORN FOR SILO.

While there is some slight difference of opinion on this matter, practically every answer indicated that the corn should be dented, in the dough stage or when about one-fourth the husks and the lower leaves were turning brown in color. This would indicate that the best results are obtained when the corn is mature enough to cut for shocking purposes. The nearer the corn is to maturity the more food nutrients it contains. Thus the more valuable from a silage standpoint, providing there is enough moisture to insure proper fermentation. Immature corn makes a dark colored sour silage which may cause animals to scour badly.

LENGTH OF CUT TO USE.

In the discussion of the lengths in which the corn should be cut when put into the silo, much difference of opinion was manifested. Some advocate 1¼ inches, other 1 inch, others ¾ inch, many ½ inch, while some advocated less than ½ inch. The longer the cut used the more economical from the standpoint of power and the more rapid the filling of the silo. The shorter cut, such as the ½ inch length insures less waste in feeding the silage and makes it possible to put a greater quantity of corn in the silo. Taking everything into consideration, either the ½ inch cut or the ¾ inch cut should be used. This will make a very palatable form of silage for the animal, and also make it easier to pack the silage so as to eliminate the air, thus preventing waste.

RAPID OR SLOW FILLING.

This is a point on which there is much difference of opinion. Where slow filling is practiced it is always possible to pack the silage thoroughly by tramping and allowing it to settle. In this way the full capacity of the silo may be utilized. The objections to this system are that where a large quantity of silage is to be put up on a farm or on several farms with the one filling outfit, it takes so much time that some of the corn must be put in too green at the beginning and some more of it too dry at the finish. It is also more expensive than where rapid filling is practiced.

Where rapid filling is practiced, say from 80 to 100 tons per day, the cost of filling is reduced to the minimum. A large quantity of corn can be put in the silo in a short time, thus insuring a more uniform quality of silage. The chief objection to this method is, unless provision is made for refilling in about a week or ten days time, that after the corn is through settling in the silo it will only be about two-thirds full. This may be partially overcome on a farm where two or more silos are built side by side by filling one for a day then the other a day, allowing some time for the corn to settle until the two or more silos are filled. In some instances where about three days are required for the filling, the work is commenced on Friday and Saturday, allowing the corn to settle over Sunday and the work is finished on Monday. Where fast filling is practiced the only way to utilize the full capacity of the silo is to fill to the top, let it settle for a week or ten days, remove the waste on the top of the silo, then refill. This requires a resetting of the machinery when used by more than one farmer, but it will pay.

DISTRIBUTING AND PACKING CORN.

There are several different ways for distributing and packing the corn in the silo. The principal points to be observed are that the light and heavy portions of the corn should be uniformly distributed. That is, the stalks and ears should not be in the center or at one side and the lighter portions such as the leaves at the other side. The corn should be uniformly packed or tramped in all parts of the silo. This is necessary to insure a good quality of silage. The majority of the silo owners prefer having the surface of the silage saucer shaped, about two feet higher at the sides than in the center for the reason that the center where the corn drops and the men usually stand gets solid and hard and does not settle afterwards as much as the sides. (This is especially true of those silos filled without some form of a distributing device.) If the sides are constantly kept about two feet higher than the center and well trod or tramped when the silo is full, the silage is wedged tightly against the sides and the heat of fermentation retained, thus killing the germs of mold. One reason why silage molds more at the sides than in the center is that it is not packed closely enough against the sides to prevent air from reaching the heated silage, thus furnishing mold making conditions.

There are several patented distributing devices on the market. The majority of these are very helpful in filling the silo. A very simple and cheap device may be made by sewing together a number of sacks (with the ends cut out) making a tube. This is attached to the end of the blowpipe and manipulated by a man inside of the silo. In this way the corn can be evenly dstributed over the entire surface of the silo. The packing of the corn is an important point. True, in time, it will settle of its own accord but more corn can be put in a silo and much better silage made when the packing is given careful attention. Tramping on the part of the men is helpful. The best way, however, is to use two good reliable men with cement tampers. The best silage the writer has ever seen was in a silo which had been packed by cement tampers. There was not a particle of waste after a few inches on the top had been removed.

ADDING WATER DURING FILLING.

Ordinarily corn cut at the proper time does not need any water added to make good silage. There are times, however, when it is necessary to add water to the corn in filling the silo. The corn in the silo at the time of filling should feel moist; if not moist, water should be added. Under any of the following conditions water should be added to the corn when filling the silo: First, when the corn is too ripe, and the leaves and part of the stalks are dried out to such an extent that they will not pack well. Second, when the corn is severely frozen before it has reached the proper degree of maturity, liberating the moisture and leaving the leaves and stems dry. Third, when refilling the silo late in the fall with shocked corn it is always necessary to add water.

There are two ways to add the water. First, put a hose in the silo and thoroughly saturate the dry portions especially around the walls. Second, where the blower cutter is used, run an inch stream of water into the blower when it is at work. This will add a sufficient amount of water to insure good results.

FILLING CRACKS AND AIR SPACES IN SILO.

The silo should be air tight. Any crack or space which lets in the air will cause more or less moldy silage. These troubles in wooden silos may be avoided at filling time by having a pail of soft clay at hand; as the silo is filled up anything that looks as though it was not air tight should be filled with a handful of clay. Any cracks or openings in masonry silos should be properly fixed with cement before filling. Great care should be taken to have the door fit well and air tight. In a good silo, properly filled, there should be no waste except at the top.

PREVENTING WASTE ON TOP OF SILO.

There is always some waste on the top of the silo, unless feeding operations are commenced as soon as the silo is filled. The amount of waste material varies under different conditions of management from two inches, where great care is exercised, to ten or twelve inches, where practically no precautions are taken to protect the same. Various methods for lessening the amount of waste have been tried out. One of the first precautions is to thoroughly pack and level the top of the silo. Some use oat chaff or cut straw. Others thoroughly soak the top with water, then seed with oats. The oats germinate and form a thick covering which serves to keep out the air, thus lessening the waste. One of the easiest and most satisfactory methods to pursue is to pick the ears of the last three or four loads of corn, then run the stalks through the cutter into the silo. Thoroughly tramp the same. Then put on from twenty to thirty barrels of water. This has the effect of hermetically sealing the silo and only a very thin layer of waste will be on top.

COST PER TON OF FILLING SILO.

The cost of filling the silo (cutting the corn in the field, hauling it, putting it through the silage cutter; tramping, leveling and covering the silo) varies from 40c to $1.00 per ton. It depends on many factors. First the distance the corn must be hauled from field to silo. Second, the kind of weather, as it will cost about fifty per cent more to fill a silo during wet and broken weather than during dry, clear weather. Third, the kind of machinery used. The cutter must be a strong well built machine with a wide feed mouth because at times it is put to very severe tests. The motor power must be ample; a fifteen horse power engine is much more satisfactory than a ten where rapid filling is practiced. Fourth, a well organized crew of men will fill a silo much cheaper than where organization is lacking. The machinery should be kept going at full blast all of the time.

The following statement, furnished by a very successful dairy farmer, gives a fair idea of the cost of filling the silo: "We hire an extra man or two and make long days with the regular help during the filling season. We have our own outfit, silo cutter and engine (16 horse gasoline) also corn binder. We use our regular low wheel, flat rack wagons and have two pitchers in the field and let one of them take the herdsman's wagon for the first few loads in the morning and the last few at night.

4 teams and drivers	$16.00
Corn binder, man and team	10.00
Cutter and engine with one man	15.00
Two extra men to pitch	5.00
Two men in the silo	5.00
Thirty gallons of gasoline	3.60
Total cost per day	$54.60

"This crew will put in from 85 to 90 tons per day, thus it costs around 60 to 65 cents per ton to fill the silo."

The above statement is a fair one. It has cost from 60 to 75 cents per ton to fill the silos at the Iowa Experiment Station during the past eight years. The higher cost was due to hauling a long distance or to rainy weather when the loading was more difficult and the sand and dirt on the corn made it very difficult to keep the knives on the silage cutter in good working condition.

WHEN TO OPEN THE SILO.

The corn may be used for feeding purposes as soon as the silo is filled. For the first few days it will be simply cut corn as it is not silage until it has gone through the heating process. In a week or ten days' time the real silage will be reached. When managed in this way there is no waste on the top of the silo. If allowed to stand for several weeks there will be some waste in the form of decayed corn. This should be removed and hauled to the field in a manure spreader as it is not always a safe feed for any class of live stock.

THE SILO.

READ BEFORE POWESHIEK COUNTY FARMERS' INSTITUTE, DEEP RIVER, IOWA.

BY H. F. CARLE.

The silo is what you make it. What I know about the silo, from my experience the past winter, I find it one of the best investments the average farmer can make.

If a man would only stop and figure out the amount of feed there is in a cornstalk, when put in the silo, no other argument would be necessary, for he would at once realize the profit, especially if he feeds stock to any very great extent. For instance, when our pasture runs short in the fall, the first place we go to make good the shortage is the corn field. Now, experience has taught that the corn, properly preserved in a silo, is just as good food for the stock in mid-winter, as when cut in the fall, when it is full of juice and the flesh-making qualities so much praised. And, why should it not be? I think there is more feed in the stalk than in the ear.

The great trouble with too many farmers is, they look more for bulk, in the feeding material, than they do for the feeding quality. Silage and a little roughage, no matter what it may be, will satisfy an animal, no matter what breed or kind—all live stock like it—horses, cattle, hogs, sheep, colts, calves and chickens—all feast and thrive on its richness.

I have been feeding silage to fattening cattle, and have been giving them all they want to eat. At the same time they have had free access to a self-feeding apparatus where they can eat all the corn they want, and my experience has been that the same age of cattle are eating less corn, and putting on more fat than in former times when I confined my feeding to corn and roughage. I have fed cattle of all ages for the past nine years, and am free to say that silage leads all as a dependable feed. It is a good appetizer, a good stimulant and at the same time acts as a regulator. What we look for is a "well-doer" in a feed lot, and my experience has been that silage is the feed that reaches the vital spot and converts some stubborn animals into prize winners on the block.

Of course we all have different opinions as to what we call "fat." Some think their cattle fat when they are only warmed up. Quality is the first thing to consider, and when we select animals of quality and put them in the feed-lot, and give them plenty of silage, with corn as a side dish, we are not very liable to be disappointed.

I am not here to say what kind of a silo a man should put up—that is a matter of personal choice, but I will give my opinion as to the size. If I were to put up another it would not be more than sixteen feet in diameter. If I wanted more silage I would go higher. A silo 16-feet in diameter measures four tons to the foot.

I have a silo 18 x 30 with 32-inch pit. It holds about one hundred and sixty tons. Last year I cut and put in 115 rows, 84 rods long, and had it full. This year I plan to plant my corn so nine acres will fill it. I will plant five and six grains in a hill, so as to get good fodder. I prefer corn of a late variety, as it produces more blades and grows taller than earlier corn, and in addition is more adapted to silage.

If a man is planning to put up a silo, he should plan so he can get the most off an acre, keeping in mind the fact that quality is as important as quantity. The silo is not an experiment—it is a certainty, and has come to stay.

All feeders take a pride in having their stock look better than the other fellow's, but there is small chance for the man who adheres to the old method of feeding. The silo man will get there ahead of the old methods and will reap his reward in reaching market earlier, with better conditioned stock, and receive the cream of the top price.

I invite you to come and inspect my silo—see for yourselves—and then act on your own judgment.

SILAGE, ITS VALUE, AND HOW TO FEED.

BEFORE HARRISON COUNTY FARMERS INSTITUTE, BY C. F. LE VALLEY, LOGAN, IOWA.

I suppose we all know what ensilage is, but as that is part of the question, will say, that in the corn-belt ensilage is made almost entirely of corn, cut when the grain is about matured, but while the stalk and blades are yet green. It is run through a cutting machine which cuts it very fine about ⅜ to ½ inch in length. The finer it is cut, the more closely it packs in the silo. This tends to exclude the air, which adds to its keeping qualities.

The corn should be cut when the husk commences to turn yellow, when if the crop is maturing properly, the stalk and blades are still green.

If help is available by all means keep the corn-binder going while filling the silo, as this brings the corn in fresh and green and makes much better silage. If for any reason the crop gets too dry, you can add moisture. I found a very good way was to place a barrel beside the cutter with a small pipe attached and by keeping it filled with water a small stream was thrown into the fan-house from where it was blown up the elevator with the silage, thoroughly wetting it. This moisture is necessary, for without it the silage would dry out and burn.

As to its value, that is a pretty hard proposition to explain to a person who has not had some knowledge or experience with it, for they won't believe you. If they did they would not only put up one silo, but two.

When you consider it is possible to raise 15 to 18 tons of corn to the acre, and that cattle will eat every pound of it readily and thrive on it, you can see what the possibilities are with the silo. This is the only way you can prepare the entire crop so as to enable the stock to utilize all of it. This is why corn is the most economical crop to put in the silo. With 40 acres of land and two silos one half the land in corn and the rest in alfalfa, would enable you to feed 50 head of steers during the year and add 200 lbs. to each one in weight. If you wanted to add a little gluten, oil or cotton-seed meal, you could increase this gain from 50 to 100 lbs. per head. The possibilities with a herd of dairy cows would be still greater as the price of the product is more stable. Ten acres of medium corn put in the silo will feed 35 head of ordinary farm cattle six months, and they will go onto grass in better condition than when they came off in the fall. Comparing it in value with alfalfa hay, I would prefer 40 lbs. silage to 15 lbs. hay for a daily ration per head. Considering the yield, this would make an acre of silage about twice the value of alfalfa hay.

In building a silo, you should determine the size, with reference to the amount of stock to be fed daily from it. It is necessary to take a certain amount from the entire surface, so as to keep it fresh. A few days' exposure to the air renders it unfit for feed. To keep it in good condition you should take off at least 1½ inches daily, 2 inches would be better. This would make about 1 foot per week and with a 16 foot silo, would feed about 30 head. As to the manner of feeding it, would say that just any old way will do, in the barn or out of doors, just as you like it. It is good either way. A very convenient way is to build your silo about 8 feet from the barn, then connect to barn by a small feed room, with door entering barn, also door in side of small room connecting with lot, which enables you to feed both ways. Of course the opening in silo should be facing the barn, then from roof of small room to top of silo, make an enclosed chute, the width of ladder and two feet deep throw the feed down to room below. This prevents wind from blowing it away. When you have a silo full of good ensilage, you know that everything on the farm from the chickens up are going to have a good, palatable meal, twice a day, regardless of the weather, so my advice to every farmer is to build at least one silo and your troubles will vanish instantly.

EMERGENCY FORAGE CROPS.

UNITED STATES DEPARTMENT OF AGRICULTURE.

Reports from many portions of the Central West indicate that the droughts of spring and early summer have greatly reduced the hay crop throughout this entire section, and that in many localities the pastures are already completely dried up. Oats, too, in some sections, are only half a crop. This situation calls for prompt recognition by farmers and the immediate planting of emergency crops to round out the shortage of both hay and pasture. There is still time between now and mid-July to plant half a dozen kinds of quick-growing crops that may be used as substitutes for the regular hay and pasture crops if the seed is secured and the land at once put into condition.

For hay there may be planted millet, cowpeas, sorghum, soy beans, and Canada field peas and barley. These same crops are suitable for pasture purposes, and, in addition, rape, rye, and winter varieties of wheat. The whole corn plant may also be used. For grain, buckwheat, millet, and cowpeas are available, and, in the southern part of the region, early varieties of soy beans.

The aim of this pamphlet is to state briefly enough essential facts relative to each of these crops to enable intelligent selection, giving reference to more complete bulletins on the subject, which may be secured later. The vital point now is the recognition of the situation and the prompt planting with least possible delay of some crop that will supplement the pastures as quickly as possible and fill empty barns with hay for winter.

CROPS THAT MAY BE PLANTED FOR HAY OR PASTURE.

MILLET.

Common millet is one of the best varieties of millet to sow as an emergency hay or pasture crop, since it yields well under trying conditions of soil and climate. It matures for hay in 50 to 80 days from the date of sowing, and for seed 10 to 15 days later. As a pasture, stock can be turned on it within a month after seeding. Use one-half to three-fourths of a bushel of seed per acre. If seeded for an early grain crop or on corn land burned up by drought, disk the land thoroughly and harrow the seed in or sow on shallow plowed land well harrowed down. Other good varieties of millet are Hungarian and German. Millet hay is of most value for cattle. It is less desirable for horses and sheep. Broomcorn or hog millet is one of the best producers of seed. Millet seed is relished by poultry, hogs, and young cattle.

SORGHUM.

For fodder sorghum should be sown as early in July as possible. Early Amber, one of the best varieties, requires 70 to 100 days to mature for fodder, and the Orange varieties about 10 days longer. The crop should be cut for fodder when the seed on about half the head is mature. The yield of sorghum is from 3 to 6 tons of cured forage per acre from one cutting. Sow on well prepared ground at the rate of 1½ to 2 bushels of seed per acre and harrow the seed in. In some sections cowpeas and sorghum are sown together at the rate of one-half to 1 bushel of cowpeas and 1 bushel of sorghum. This makes better hay or pasture than sorghum alone. As a summer pasture the mixture is especially relished by sheep, cattle, and hogs. Sorghum fodder is of greatest value for cattle, but is also a good roughage for horses and sheep.

COWPEAS.

Throughout Indiana and Illinois, especially the southern portions, and the States to the southwest, the early varieties of both cowpeas and soy beans may be successfully sown for hay or pasture as late as July 20. Both crops are equal or superior to clover in feeding value and are relished by every class of stock on the farm. Cowpeas will give from 1 to 3 tons of hay per acre. New Era is one of the earliest varieties, maturing seed in 60 to 80 days after sowing. Other early varieties are Early Blackeye and Michigan Favorite. Whippoorwill, while a little later, is a more vigorous grower and a general favorite for hay or pasture. In Missouri, Kansas, and the southern portion of Illinois and Indiana a cowpea hay crop can be grown after an early grain crop has been removed. New Era is one of the best varieties for this purpose. The most satisfactory results are likely to be secured by seeding on well-prepared ground in rows 27 to 30 inches apart, at the rate of about half a bushel per acre, keeping the rows cultivated. If seeded broadcast at least 1 bushel should be sown and the crop harrowed in. Cowpeas sown in standing corn at the last cultivation will furnish a large amount of pasturage, and this method of handling the crop is recommended.

SOY BEANS.

This crop is somewhat more productive of seed than cowpeas and is equally as rich in feeding value as that crop. The hay is valuable for dairy cows, brood sows and young stock. Seed in rows, 24 to 32 inches apart, at the rate of one-half to three-fourths bushel per acre on well-prepared ground and cultivate the crop. Ogemaw is one of the earliest varieties, maturing seed in 70 to 90 days. Extra Early Dwarf and Early Yellow mature in about the same time. Ito San is a medium early variety and a good seed yielder. Hollybrook is still later and a heavy producer of forage.

BARLEY AND PEAS.

Barley and Canada field peas seeded together at the rate of about 1 bushel of each make an excellent pasture and soiling crop, and if seeded by July 15 will mature for hay. The hay is relished by sheep, horses, and cattle and is a rich protein forage for dairy cows, while the pasture is especially valuable for hogs and lambs. The yield varies from 2 to 3 tons of cured hay per acre and the hay is fully equal in feeding value on the farm to the best mixtures of clover and timothy. Oats are frequently seeded with Canada field peas for forage, but after July barley makes a more rapid growth than oats and is less subject to rust. A mixture of barley and peas may be seeded together with a grain drill on well-prepared, fertile soil, preferably clay loam, or broad casted and harrowed in, covering 2 to 3 inches deep.

RAPE.

This is strictly a succulent pasture crop of especial value for hogs, growing lambs, and fattening sheep. It may be sown in corn at the last cultivation, using about 3 pounds of seed per acre and lightly harrowing it in. Much better results will be obtained by seeding the crop alone on fertile clay loam or black soil, sowing either in drills 30 inches apart, and at the rate of 2 pounds per acre, or broadcasting at the rate of 3 pounds per acre, covering about half an inch deep. The crop will be ready for pasturage within 50 to 60 days from seeding, and on good soils will furnish 20 to 30 tons of green forage. An acre of rape on good land will furnish pasture two or three months for about 20 hogs or as many lambs fed light grain rations in addition. Dwarf Essex rape is the variety to grow. Cattle and sheep should be gradually accustomed to rape, and well filled up on other feed before turning in to graze, otherwise they may bloat.

BUCKWHEAT.

This is a quick-growing crop, maturing seed in about 70 to 75 days from the time of seeding. It is chiefly valuable as a grain crop for poultry and hogs, through the ground middlings make rich protein feed for dairy cows. For horses the ground grain may constitute about one-third of the grain ration and when so used is considered equal in feeding value to oats. As forage it may be used as a soiling crop for dairy cows, having considerable value for this purpose. Of the three varieties commonly grown—Japanese, Silver Hull, and Common—Japanese has usually given best results and is recommended for the West. Seed 2 to 3 pecks per acre, either in drills or broadcast, covering 2 to 3 inches deep. While buckwheat will do better on poor land than some crops, it gives best results on well-prepared, fertile soil. The crop is easily killed by frost.

RYE.

This crop can be sown in the standing corn at the last cultivation in July and will afford considerable pasturage for all stock. It is often thus sown either alone or mixed with rape for lambs or sheep being fattened for market. If seeded on especially prepared ground the crop will come on much earlier and give considerably more fall feed. Seed at the rate of 1½ bushels per acre. In pasturing cows on rye the change from other feeds to rye should be gradual to avoid possible taint of milk. Winter varities of wheat if sown at once will also afford a large amount of fall pasture.

CORN.

Every farmer knows the value of corn as a supplement to a pasture crop late in summer, for which purpose it may be used for cattle as soon as it is tasseled out and for hogs as soon as the ears have reached the roasting stage. Not so many realize that an acre of corn stover—the crop left standing after the ears have been taken—is as valuable for feeding to cattle and horses as an acre of timothy hay. Ton for ton, corn stover has nearly the same feeding value as timothy. With a short hay crop, therefore, every effort should be made to carefully handle the corn crop. The feeding value in the stalk and leaves of the corn plant increases up to maturity, but if the stalks are allowed to stand in the field after ripening, there is considerable loss. This loss at the Iowa Experiment Station two months after ripening amounted to more than one-half of the value of the stalk.

Investigations show that of the feeding value of corn stover about 27 per cent is in the stalk and leaves above the ear, 26 per cent in the husks, and 47 per cent in the stalk and blades below the ear. When left standing in the field many of the lower leaves dry up and are blown away or beaten down by rains into the ground and lost. Farmers are urged to cut corn for grain as soon as the ears are well dented and a few dry blades appear. Thus handled, the maximum feeding value of the crop with reference both to grain and stover will be secured. Put the corn in good-sized shocks and after husking out the ears put a number of shocks together. Large shocks lose less food constituents by weather and fermentation than small shocks. If the stover is put into the barn it must be thoroughly dry to prevent molding. Except for convenience of handling it is not necessary to shred corn stover, as apparently its feeding value is little if any increased thereby. By cutting and shocking the feed value of stover is increased one-third to one-half over what it would be if left standing in the field. With a short hay crop this loss should be obviated by gathering and shocking the corn.

PASTURES.

WHY PASTURES FAIL.

Many pastures fail in midsummer because they are not made right. Too few grasses and clovers are employed in the mixture. In many sections, particularly in the Central West, timothy is the only grass used. This should be supplemented with clovers that mature earlier and again come on later in the season than timothy. Some of the other grasses with different habits of growth and seasons of maturing should also be used in the mixture, thus securing with the clover not only more pasture but a far better quality of pasture.

PASTURE MIXTURES.

Instead of seeding timothy alone, the following mixture is suggested, per acre: Timothy, 10 pounds; red clover, 8 pounds; alsike, 2 pounds; orchard grass, 4 pounds; Italian rye grass, 5 pounds; English rye, 4 pounds; meadow fescue, 4 pounds. Such a mixture will give a heavier hay crop and hay of better quality than timothy alone, and when left as pasture will afford a much greater quantity of forage throughout the growing season, besides being earlier. Kentucky bluegrass will usually come into the pasture of its own accord, but can be hastened by seeding about 5 pounds with the mixture mentioned above. If the grasses mentioned above are not available, then a mixture of 12 pounds of timothy, 8 pounds of common red clover, 4 pounds of mammoth clover, and 4 pounds of alsike may be seeded.

The grasses should be seeded in the fall with the winter grain and the clovers in early spring when the frost goes out, or both may be seeded together with the spring grain. If a grass-seed attachment to the grain drill is not available, the seed may be mixed in the proper proportions with the grain in the grain box and allowed to run down the grain tube with the grain.

The timothy and clover will be available for hay the first year after the grain is cut. By the third year a good permanent sod will be secured that, if properly cared for, will improve with age. Such pastures will not produce much feed during periods of intensive drought, but if they have been properly cared for will begin to grow again as soon as rains come. To avoid as much as possible the injury from drought it is essential that pastures be not grazed too closely. There should be a good green cover or "grass mulch" in order to protect the roots from the hot sun. Such a pasture will remain green longer during dry weather and will begin to grow as soon as the drought is broken, thus shortening the period of bare pastures.

However, provision should always be made to supplement the pastures at this season by planting summer forage to tide over.

SUPPLEMENTARY AND SUMMER PASTURES.

An excellent plan in providing against shortage of pastures is to grow each year some of the supplementary crops, such as rye, millet, cowpeas, rape, or sorghum, mentioned above to be used during the dry season. An excellent annual pasture can be made by seeding together in spring 1 1-2 bushels of oats, 30 pounds of sorghum, and 10 pounds of mammoth or common red clover. The oats are ready for pasture in late spring and early summer, the sorghum comes on at its best in the hot midsummer, while the clover gives some fall pasture.

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Approved:
James Wilson,
Secretary.
Washington, D. C., July 3, 1911.

FORAGE CROPS FOR HOGS.

(Breeders' Gazette.)

The quick and easy income usually yielded by hogs prompts wasteful methods of management. Hogs are not always profitable, and when prices for fat stock are low compared with feed, it is the wasteful feeder who suffers most. Those who have raised their pigs cheaply frequently find that they have made a profit on the operation taken as a whole, even when they have been forced to fatten 4-cent hogs on 50-cent corn.

Pasture of some kind is essential for hogs. It pays to provide fresh grazing throughout the growing season. Health and thrift as well as economy of grain depend upon it. The pig raised on a diet including an abundance of toothsome succulent feed matures a large frame at an early age, with large vigorous digestive organs and the ability to put on fat rapidly and cheaply at the last. If the green feed can be continued along with corn until the hog is ready for market the gains will be more economical than can be made in a dry lot on grain alone.

Many a cornbelt renter has been kept from raising hogs because he had no permanent pasture to spare for them. Such an obstacle is not so serious as it may seem. Bluegrass pasture is not nearly so good as some other crops for hogs. Clover and alfalfa are probably worth about twice as much per acre. A small area temporarily enclosed with low woven-wire fence stretched tight may be turned into an admirable hog pasture by sowing suitable crops early in the spring. Oats, rape and clover, oats, rape and Canada field peas, or rape alone, produce about as much pork per acre in the cornbelt as a well-set clover sod. The land must be thoroughly prepared and the seed sown rather thickly. When the crop gets well started an abundance of feed is assured if it is not overstocked.

Clover, alfalfa and annual forage crops have been found to yield from 500 to 800 pounds of pork per acre apart from that produced from the corn fed in addition. Best results after weaning, where economy rather than rapidity of growth of the pigs is desired, have been secured with a half ration of grain on pasture until the shotes were ready for the final rush of fattening. It is possible by this plan to make a large amount of healthy growth on the cheap green feed, although the pigs cannot thrive on it without some grain fed all the time. The man with limited pasture may advantageously provide for his hogs in this way.

THE HARDY CATALPA IN IOWA.

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INTRODUCTION.

The hardy catalpa is one of the best fence post trees that can be grown in Iowa. Nearly all the catalpa plantations in the state have been studied by the forestry section of the experiment station. A large majority of them are successful, and seem to be a paying proposition for their owners.

RANGE OF SUCCESSFUL GROWTH.

The hardy catalpa is a southern tree, its natural locality being throughout southern Ohio, Indiana and Illinois, eastern Missouri, and southward. Iowa is considerably north of its natural range. In the southern half of the state there is very little danger of winter killing if given a favorable location. In the northern part, however, there has been considerable trouble from this cause. For this reason it is not advisable to plant catalpas in extensive plantations in the extreme northern and especially in the northwestern part of Iowa.

North of the line drawn between Harrison and Monona counties, and continued eastward across the state, catalpa plantations should be protected by a windbreak of hardier trees planted along the north and west sides of the grove. Three or four rows of cottonwoods or willows afford plenty of protection.

FORM AND SIZE.

When planted in groves the hardy catalpa reaches its best development form in sixteen to twenty years. Trees in single rows require a much longer time to reach their full development. Closely planted catalpas develop a tall, slender trunk, with very few large branches. The height of sixteen to twenty-year-old trees varies from 30 to 40 feet. The diameter of 35-foot trees, measured one foot above the ground, is about 7 or 8 inches. The trees hold their diameter well, and will usually cut out three 6½-foot posts. As the catalpa continues to grow until late in the fall, the top 6 inches or so does not mature and is frozen. The next spring the growth starts from a bud below the injured portion, causing a slight crook in the trunk. This makes the catalpa undesirable for telegraph or telephone poles. Also, it is seldom that the trees reach pole size without becoming affected by fungus. When used for posts, the trees can be cut before they become affected with the fungus. The slight crookedness does not detract seriously from the value of the posts.

SELECTION OF SPECIES.

The most common cause for failure with catalpas is a mistake in the selection of the species to be grown. There are two native species of catalpa in the United States, the hardy catalpa (*Catalpa speciosa* Warder) and the common catalpa (*Catalpa catalpa* Karst). The common catalpa is not hardy enough to be grown successfully in Iowa. Hardy catalpa seeds are very wide, with a broad brush of hairs at each end and a fringe of hairs along one side. Seeds of the common catalpa are much narrower, with a narrow, pointed brush of hairs at each end. Hardy catalpa seed pods are 7 to 20 inches long, with thick, strong walls. There are seldom more than three in a cluster. Common catalpa seed pods are 6 to 18 inches long, with thin walls. From 5 to 15 pods grow in a cluster. The bark on old stems of hardy catalpa is deeply furrowed, but never peels off in scales. That of common catalpa is thin and light, falling off in light scales, but it is never deeply furrowed. The two species of catalpa cross readily. Bees sometimes carry the pollen as much as two miles. Thus it will be seen that great care is necessary in order to obtain pure seed of the proper species.

The seed pods ripen in October. They may be gathered as soon as ripe or allowed to hang on the trees until January or February. When gathered they should be sacked and stored in a dry room. Within a few weeks the pods will split open upon the slightest disturbance and discharge the seed. The seed keeps for several months without loss of vitality if stored in a cool, dry place.

PROPAGATION FROM SEEDS.

The catalpa is usually grown from seed. Seed beds should be made as fine and mellow as possible before the seed is sown. Upon this largely depends the success or failure of the planting. The seed should be sown in broad furrows, 3 or 4 inches in width and ½ inch deep, at the rate of 35 or 40 seed to the foot. The rows should be wide enough apart for horse cultivation. The seed must not be covered more than ½ inch deep or the sprouts will be unable to get through.

The seed should be sown as soon as the ground is thoroughly warm and danger from frost entirely past. The plants grow slowly during May and June, and require the best of cultivation during these months. With the warmer weather of summer their rate of growth increases, and they reach a height of from 15 to 30 inches by the end of the season.

If left to stand in the seed beds throughout the winter a large percentage of the young trees will winterkill down to within a few inches of the ground. The following spring they send out one or more vigorous sprouts from their uninjured crowns. Freezing back in this manner can be prevented by taking up the seedlings in the fall soon after they shed their leaves and storing them in a cellar over winter, or by heeling them in and covering the entire stem.

PLANTING STOCK.

One-year-old seedlings are the most satisfactory for extensive plantings. At this age the seedlings are strong enough to establish themselves readily in their new location and to make a good growth the first season. They can be planted at a much less expense then than a year later. The catalpa transplants very readily, and, with proper care, a full stand is easily secured. In nursery practice the one-year-old seedlings are sorted into three grades, according to their size. Grade No. 1 includes the plants ranging from 18 to 30 inches and upwards in height. Grade No. 2 includes those from 12 to 18 inches in height. Grade No. 3 includes all plants under 12 inches in height. The difference in price between grades is from $1 to $3 per thousand. The No. 1 trees are by far the most satisfactory. Trees of grade No. 2 are all right for extensive plantings. Grade No. 3 are the culls of the entire lot, and should be rejected, whether grown in a nursery or at home. The small seedlings do not make as satisfactory a growth as the larger plants. They require more cultivation, and a larger percentage of the trees die during the first and second years after planting.

SOIL REQUIREMENTS.

The hardy catalpa does well on any Iowa soil with the exception of gumbo, light sandy, or poorly drained soils. Almost any good corn soil is all right for catalpas. The catalpa is well adapted for planting on bottom lands that are subject to overflow. Occasional floodings do not injure the trees unless their entire tops are covered.

PREPARATION OF PLANTING SITE.

To insure a full stand of living trees and a good growth the first year, the ground in which the trees are planted must be free from sod and brush, and in the best possible physical condition. When planted on such soil and given thorough cultivation, the trees will make a growth of from 3 to 6 feet the first summer.

TIME OF PLANTING.

The trees may be set out any time from the time the ground is in workable condition in the spring until the middle of May. They should be planted before the leaves begin to unfold. Fall planting is not advisable. The trees are liable to winter kill, and they will need protetcion from rabbits one year earlier than if planting had been delayed until spring.

SPACING.

The most satisfactory spacing is 6x6 feet or closer. The spacing in the plantations examined varied from 3x6 to 6x10 feet. Fairly close spacing is necessary in order to force the trees to develop tall, straight trunks rather than heavy branches. Even spacing makes cultivation easier.

Under intensive conditions the trees may be spaced as closely as 3x6 feet and every other one in the row cut out after eight or ten years. At this time each tree cut out will make one post and considerable firewood. There are three advantages to this plan. First, the crowding forces the young trees to grow up straight without large branches. Second, the dense shade keeps out bluegrass and weeds, and reduces the amount of cultivation needed. Third, the litter from the trees provides a mulch that helps to retain moisture. The sprouts from these cut-off trees will not grow much on account of lack of sunlight.

CULTIVATION AND CARE OF PLANTATION.

Thorough cultivation is necessary for the first two or three years, until the trees are large enough to shade the ground completely. Catalpas can not compete successfully with grass and weeds. Rapid growth is stimulated by a loose, mellow soil.

The only care that the trees require after cultivation ceases is protection against injury by fire or live stock. The danger of injury by fire is not great unless there is a growth of grass or weeds on the ground. Cattle, horses and sheep are especially harmful on account of packing the soil about the trees.

PROTECTION AGAINST RABBITS.

For the first two winters rabbits are the most destructive enemies of young catalpa trees. One of the best methods of protection is a light wooden shield placed around each stem. These shields are inexpensive, costing about $6 per thousand. They are easily and quickly put on, and they give perfect protection. They are serviceable for three or four years, and may be used on two lots of trees. Another method of protection that has proved successful where tried is that of enclosing the young plantation with a woven wire rabbit-tight fence. This method is more expensive than protecting the trees with shields, and not always as effective. The trees are perfectly safe from attacks of rabbits after the second winter.

CUTTING BACK.

Some catalpa growers practice cutting the trees back to stumps level with the ground when two or three years of age. This is done to secure a straighter growth. On the farm the advantage will hardly pay for the extra work. If cutting back is to be practiced, it should be done in March or April, after the trees have grown two years in the permanent plantation. The stumps will send out from three or four to a dozen sprouts, all of which must be cut off except one of the strongest. Under favorable conditions this one sprout should attain a height of from 6 to 10 feet the first season, and by the end of the second season the sprouts will exceed the height of five-year-old trees that were not cut back. If one trimming of the stump sprouts would answer all needs, the care of the sprout growth would be a simple matter, but the stumps persist in sprouting and it is usually necessary to go over the plantation two or three times to keep the stumps free from undesirable sprouts.

During the first year after cutting back, the sprouts are often split from the stump by the wind. To shelter the sprouts from such injury it is advisable when cutting back the seedlings to leave four rows uncut along the side of the plantation to serve as a windbreak. If the plantation is of considerable size, strips of four uncut rows should be left at regular intervals to protect the interior of the grove. When the sprout growths are two years old the five-year-old seedlings that have served as windbreaks can be cut back. The sprouts arising from their stumps will be protected by the older sprouts.

FUNGUS DISEASES.

Catalpas are susceptible to injury by a fungus disease, *Polyporous versicolor*, which attacks trees in groves, though usually not until they are past eighteen years of age. The fungus makes the wood worthless. The only way injury can be avoided is to cut the trees before the disease has progressed far enough to affect seriously the strength of the wood. The fungus gains entrance through the lower limbs that are killed by the shade from the upper part of the tree, gradually eating its way into the trunk. Within a very few years the wood of the entire trunk is affected and the tree soon dies. The presence of this fungus is easily detected by the appearance of brackets or punk knots, often spoken of as toad stools, on the surface of the infected parts, also by the occurrence of broken limbs. In the advanced stage of the disease the trunks of the trees are usually covered with a growth of brackets, which are the fruiting organs of the fungus. The trees infected are often broken off in wind storms at heights varying from 2 to 10 feet from the ground.

LENGTH OF ROTATION FOR THE CATALPA.

A careful study of the catalpa plantations within the state indicates that the catalpa must be handled on a sixteen or eighteen year rotation. At this age the trees are still sound, and are large enough to cut two posts each. The trees do not reach their full growth at this age but any further increase in growth is not enough to balance the risk of losing the crop by an attack of fungus.

SECOND CROP.

If the trees are cut while they are in a thrifty condition, vigorous sprouts will arise from the stumps and yield a second growth of posts in about twelve or fourteen years. This second crop of posts will practically equal the first cutting in number and value. They will be straighter and have fewer limbs than the posts of the first cutting, and will be every bit as durable.

To secure a good growth of sprouts the trees should be cut in February or March. The stumps should be left not more than 6 inches above the ground, and cut smooth with the slant all in one direction. A low cut stump produces a more vigorous sprout. Early in June the sprouts should be thined to one to each stump. The sprout that is left to grow into the future tree should be the strongest and best arising from the stump. In July or August it may be necessary to make a second thinning to cut off all sprouts that start after the first thinning. After the second thinning the plantation will need but little attention until the trees are ready to cut for posts.

A profitable second crop cannot be obtained if the trees of the original planting are allowed to grow until they become infected with fungus. Where the trees have been affected with the fungus a second crop should not be planted in the same ground for some time. The spores retain their vitality for several years.

TIME OF CUTTING.

Posts cut in November or December and piled in open ricks will dry slowly without severe season checks. By the next summer such posts will be thoroughly seasoned and ready for use. If a second crop is to be grown from the old stumps, better sprouting will be obtained if the trees are cut in February or March. The posts cut at this time will be ready for use by fall. Midsummer is not a good time to cut posts as they check severely in seasoning. These checks sometimes extend to the pith, weakening the posts and making a place where rot can start readily.

SEASONING.

To air dry posts and poles thoroughly will require from six to nine months' time, depending upon the season and also upon the size of the posts. The posts can be seasoned quickly and satisfactorily by placing in an open pile in alternating tiers of 3 and 7 posts each. The order of piling admits an abundance of light and a free circulation of air. The bark of the catalpa is quite thin and does not interfere to any great extent with seasoning. It clings tightly to the seasoned wood and is not objectionable on the post.

The reason for thoroughly seasoning posts or poles before setting them is that drying the wood increases its durability. Destructive bacteria and fungi require moisture for their development, and cannot injure a post that is thoroughly dry.

DURABILITY OF CATALPA WOOD.

The catalpa wood is very durable, second only to osage orange and red cedar. In spite of this fact many complaints have been received to the effect that the posts are short-lived and not satisfactory. An investigation of several such criticisms has shown that in such cases the posts were either set before they had been seasoned, or the trees were infected with fungus and the strength and durability of the wood seriously injured before the trees were cut.

When the trees are cut while they are in a perfectly healthy condition and the posts thoroughly seasoned before they are set, the wood makes very durable fence posts. It is light, but strong enough to resist the required strain of the fence, and it holds staples very satisfactorily. The posts are clean, smooth, and neat in appearance.

For general repair work on the farm the catalpa is very serviceable. It has been used with entire satisfaction for sweeps on horse powers, for tongues on all sorts of implements and vehicles and for double-trees, single trees and neckyokes.

The following statements from catalpa growers throughout the state show the value they give the tree for the various purposes mentioned:

"The catalpas have done fairly well for me, because I planted them on good corn ground and gave them thorough cultivation and trimmed them while young. I think the hardy catalpa is the best post tree to grow in this section of the state. However, I know of several other plantations in this vicinity that have been failures because the trees were not cultivated and the grass sod practically choked them out. A year ago I sold two acres of my grove to a neighbor for two hundred dollars. He did all the work of cutting and hauling and was well satisfied with his bargain. He used the trees for posts and poles.

At this rate my catalpa grove has paid me $5 per acre per year for the use of the land. I had in addition to this the benefit of protection afforded by the trees, which I valued quite highly. The sprouts from the stumps made a remarkable growth last summer, many of them exceeding 12 feet in height. I now believe we will have a better grove of trees in eight or ten years than we had before cutting.

(Signed) GEORGE S. WALLER,
Pioneer, Iowa.'

"A short time ago when visiting at my old farm I looked the catalpa trees over for the first time in years, and was surprised at the rate of growth they have made. Some of the largest measure 42 inches in circumference and are tall and straight. My son has cut posts from this grove for the past eight years, and says that he believes the catalpa posts to be as good as white oak posts, if not superior.

For general farm purposes I think the catalpa the best timber I know. The hardy catalpa does not succeed on light sandy soil, but on better land I consider it the best tree that we can grow for post production. Catalpa posts last fully as long as the burr oak or white oak posts.

Of course, you will sometimes find a burr oak post that will stand for twenty-five or thirty years, but their average life is much less. The experience we have had with the catalpa posts leads me to believe that they are on the average equally as durable as the oak.

(Signed) GEORGE MEINEMANN,
South Amana, Iowa."

"I consider the hardy catalpa the best tree to plant in this part of Iowa for posts and poles. I value it very highly for general repair work on the farm, such as making eveners, singletrees, tongues, blocks for underpinning, etc. I like it especially for repairing farm machinery, because it combines considerable strength with lightness. I have some posts still standing. These have been in the ground at least nineteen years. They were peeled and charred without being allowed to season before they were set. From observations I believe, however, that if the posts are seasoned one year or longer before setting they will last longer than when treated as above mentioned.

(Signed) THEO. C. BLUME,
Denison, Iowa."

"It is an easy matter to grow the trees as they require but little cultivation or other attention.

I am an osage orange enthusiastic, but I believe my half acre of catalpa trees will furnish all the posts and poles needed on the farm for the next generation.

(Signed) REUBEN REDMAN,
Oskaloosa, Iowa."

YIELD OF POSTS AND THEIR VALUE.

To give the readers an idea of what returns may be expected from a catalpa plantation, the results obtained in some of the plantations studied are given herewith:

County	Number Grove or Plot	Age of Trees Years	Spacing	No. of Posts per acre	Value per acre	Annual Return per acre
Webster		28	3 x6 ft.	2114	$356.36	$12.73
Mahaska	1	28	4 x6 ft.	2265	407.70	14.65
Mahaska	2	28	3½x6 ft.	3663	569.66	20.34
Iowa	1	25	4 x8 ft.	1796	269.40	10.77
Iowa	2	24	6 x10 ft.	1723	310.00	13.00

In determining the value of these plantations the No. 1 posts were valued at 18 cents each and the No. 2 posts at 10 cents each, this being the present market value. Some of the plantations were not a full acre in extent while others exceeded an acre. In each instance the figures given are reduced to the basis of one acre. A more detailed account of each of these plantations follows.

WEBSTER COUNTY.

This plantation is on well drained rich prairie soil. It occupies about four acres of ground and the general appearance of the plantation indicates that the trees were well planted and cared for when small. The growth of the trees has been remarkably good, the stems are straight and clear of limbs for a height of from 20 to 25 feet. The average height of the trees is between 25 and 40 feet and the average diameter breast high is 6 inches. The class I trees in this plantation will cut four posts per tree while trees in classes II and III will cut two posts each.

The stumps in this plantation show that half the trees were cut out when twelve years old, leaving the stand 6x6 feet. Since that time the cutting has been haphazard. In some places only the best trees have been cut and in others all have been cut. At present only about one-fourth of the original stand is left. The figures given are based on a stand of 604 trees per acre.

There is no reproduction by sprouts from the stumps, the shading having been too dense. The ownership of this plantation has changed hands several times in recent years and the trees have received no attention whatever since the first transfer. The fungus disease mentioned is quite common in this plantation and unless the trees are cut in the very near future the loss from it will be serious.

MAHASKA COUNTY—PLANTATION NO. 1.

This plantation occupies an area of .55 of 1 acre. The soil is rich black upland loam. The drainage is good and the trees have made an excellent growth. The average height of the dominant trees is about 40 feet and their diameter breast high varies from 6 to 15 inches. The average diameter is 7 inches. The trees in class I will cut four 6½ foot posts and the Class II trees will cut two posts each. The boles of the trees are straight and clear of limbs to a height of 25 feet. This plantation received good care during the early years of its development, but in recent years it has received no attention whatever, except to keep out live stock.

Ten years ago about one-third of the trees were cut out and used for various purposes. Fifty of the posts from this cutting were used in a division fence on the farm on which the plantation is growing. A close inspection of each post in this fence showed that after nine years of service only two of the fifty have rotted off. Some others are failing but the majority of them will last for several years yet. These posts show from six to twelve rings of annual growth at their upper ends. This indicates that they were cut from trees that were from nine to fifteen years of age, figuring that it took three years for the tree to grow the length of the post. The fungus is common in this plantation and unless the trees are soon cut the entire crop will be a loss.

MAHASKA COUNTY—PLANTATION NO 2.

The area of this plantation is .38 of 1 acre. The soil is a rich black prairie loam, well drained, and the site slopes gently to the north. The plantation has received the best of care and cultivation at all times and is in absolutely perfect condition at the present time. The close spacing, 3 1-2 by 6 feet, provided sufficient shade from the time the trees were two years old to keep out all undergrowth, and at the same time shaded off the lower limbs before they reached an objectionable size. The trees have developed straight trunks clear of branches to a height of 25 feet. One very noticeable feature of this plantation is the healthy condition of the trees. Not a sign of the presence of fungi was observed. Another condition noticed in this plantation in striking contrast to conditions found in other plantations was the entire absence of dead and decaying trees lying on the ground. Each year the dead material accumulating in this plantation has been carefully gathered and utilized or destroyed. This care has held the development of the fungus in check.

When the trees were eleven years old one-half of them were cut out, which left the remaining trees spaced 6x7 feet. Since that time a considerable number of trees have been cut out to supply the demands of the farm. The trees that were cut out when eleven years old were used for posts as far as their size would permit. The posts were thoroughly seasoned and the butt ends soaked in a solution of salt brine before they were set. These posts after seventeen years of service are almost as good as when set. The salt solution has probably helped to some extent in preserving them. However, salt is readily soluble in water and soon leaches out of wood that is placed in moist ground.

The trees at present average about 40 feet in height with clean straight boles 6 to 10 inches in diameter breast high. In thinning this plantation the inferior trees have been removed and practically every tree now in the plantation is a No. 1 tree. The estimated annual return of $20.34 per acre, based on the present value of the posts that can be cut, is practically a net return. The posts that have been cut up to the present time have fully paid the cost of establishing and caring for the plantation. At this figure the catalpa is a very profitable crop, but these returns can only be secured by good care and proper management.

IOWA COUNTY.

This plantation is very irregular in outline and the total area was not determined. The original plantation covered approximately 15 acres, but on account of the unsuccessful growth of the catalpa on the more sandy parts, the ground has been cleared and planted with white pine, which is making an excellent growth. The site of the original catalpa plantation is a hill top with a gentle slope in all directions. The soil at the top of the hill is a light, loose sand that is too light to produce farm crops. Down the hillside the soil improves and at the base of the hill is a rich sandy loam. Two representative areas in this plantation were selected. No. 1 as near the top of the hill as possible, and No. 2 at the base of the hill. The description of each follows:

Plot No. 1. This plot includes one-fourth of an acre. The soil is light and very sandy. The site begins at the top of the hill and slopes to the north. The trees on this site have made a very poor growth, partly on account of the unfavorable soil and partly on account of the wide spacing, 4x8 feet. They are full or large limbs from the ground up and the boles are very short. The trees in this plot will average only two posts, and these will be rough, crooked, and undesirable. No cutting has been done in this plot, and 96 per cent of the trees of the original planting are still on the ground. The estimated annual return of $10.77 per acre is the gross return.

Plot No. 2. This plot includes .95 of 1 acre and is located on a gentle south slope at the foot of the hill. The soil is a rich black sandy loam. The trees are uniform in height, averaging between 45 and 50 feet. The average diameter breast high is 7 inches. They have made an exceptionally fine growth. The poles are straight and clear of limbs to a height of from 30 to 35 feet and they hold their diameter well. Many of the trees in this plot will cut good 30 foot poles with 6 inch tops. The best returns from this plot can be secured by cutting the larger trees into 24 and 30-foot poles and the tops and the smaller trees into posts.

Trees have been cut from this plot from year to year as demands required and an estimate of the present stand would give a wrong idea of the yield of posts and the value of the plantation. The present stand of trees was measured and the number of posts they would cut determined. The average cut was four posts per tree. By going over the ground carefully it was found that 194 trees had been cut from this tract during the winter of 1908-9. These were, no doubt, average trees and would cut four posts per tree. This added to the yield of the present stand gave the results shown in the table. The trees on this plot have made by far the best growth of any plantation seen within the state, but the wide spacing, 6x10 feet, reduced the number of trees per acre to such an extent as to cut down materially the producing power of the land. The soil within this plot is entirely strong enough to grow double the number of trees that were planted upon it. This would have increased the returns very materially.

The fungus disease is seriously injuring the trees of this plantation and unless they are cut within the next two or three years the crop will be an entire loss.

THE ERADICATION OF QUACK-GRASS.

U. S. Department of Agriculture.

INTRODUCTION.

While the studies outlined in this bulletin have been made on ordinary quack-grass or witch-grass (*Agropyron repens*), prevalent in the North-Central and Northeastern States, other observations not presented in this paper lead us to believe that the same principles here laid down apply equally to all rootstock-producing species of this same genus, embracing a large number of closely allied grasses found in the Rocky Mountains and the Pacific States.

THE UNDERGROUND STEMS OF QUACK-GRASS.

The underground stems are the seat of the remarkable vitality of quack-grass, therefore, for a full understanding of this subject the plant in its relations to the underground stems will first be briefly considered. These stems are often called roots. They are not roots in the true sense of the word, but rootstocks, that is, underground stems. The distinction between rootstocks and roots is that rootstocks have buds on them as stems do, while roots do not. Another very important distinction is that rootstocks do not absorb material from the ground, while roots do. The rootstocks are dependent for their growth upon the material absorbed by the roots and elaborated in the leaves in combination with the material which the leaves draw from the air. This material elaborated in the leaves then goes down to form the underground stems, or rootstocks. The plant is simply storing up material to draw on next year.

As the material for the growth of rootstocks comes from the leaves, the amount of leaf growth which the plant produces in any one season is largely a measure of the amount of rootstock growth. So, by limiting the development of top in any way the number of underground stems produced is thereby limited. If little or no top is allowed ot grow very little rootstock will be developed. Just as we would expect a small crop of potatoes if we were to keep the top of the potato plant cut back close to the earth, so should we expect a minimum of rootstock growth to be produced by the quack-grass plant if its top is kept closely cut. By actual observations this is found to be true.

There are three types of management of quack-grass land that bring about three widely different conditions in the vitality of the plant. The three resulting types of quack-grass land are given below:

TYPES OF QUACK-GRASS LAND.

(1) *A cultivated field infested with quack-grass.* The deepest and most vigorous rootstock development of quackgrass is found in cultivated fields. There are several factors which cause this. The principal one is probably deep preparation of the land. When the plant is left undisturbed the rootstocks have a tendency to get nearer the surface every year. Deep plowing puts the stem back to the bottom of the furrow, and a mass of tangled growth is then sent out toward the surface, a large part of the vitality of the buried stems going into the new stems reaching toward the surface. This new growth lives until the next year. When the stems are buried deeply to begin with and cultivation is not kept up long enough to kill out the grass (and it usually is not on this type of land), the plant takes on a new lease of life after cultivation stops, the loose deep soil furnishing an ideal place in which to grow. As a consequence, the plant becomes firmly established and is well able to stand the next year's battle.

(2) *Meadowlands.* If the meadow has been down for several years, and especially if two cuttings of hay a year have been secured, the rootstock development is found to be about half the extent and depth of that found in cultivated land.

(3) *Pasture lands.* The smallest rootstock development is found in closely grazed pasture lands. Here the underground growth of quack-grass finally becomes a few mere shreds of root-stocks, and these are very near the surface.

After completing the studies, as heretofore outlined, of the rootstock habits of quack-grass under different field conditions, experimental work was undertaken looking to the discovery of a practical method for the control of this pest. That quack-grass can be destroyed by persistent clean cultivation is well recognized; that the grass in its worst form (where infesting a cultivated field) can be killed in one season and a crop produced simultaneously has been demonstrated. The chances of a farmer, however enthusiastic he may be at the beginning of such an undertaking, carrying work of this kind through to a successful conclusion are very problematical. Such work requires considerable labor of a more or less careful, painstaking nature at a very busy season of the year. The early growing season is a period of many interests, and generally as soon as the farmer finds that the quack-grass is fairly well under control he immediately centers his interests on some other seemingly more important line of farm work. The result is that the pest soon gets another good start, and the crop by this time has advanced so far toward maturity that strenuous cultivation would be detrimental to the yield. Consequently, the remainder of the work is taken out in good intentions for the next year.

MIDSUMMER THE BEST SEASON TO BEGIN ERADICATION.

Bearing these facts in mind our investigations have naturally centered on methods that could be used during the periods when other farm work is not very pressing. In midsummer, immediately after haying, there is usually a period of more or less relaxation from general farm work. This is a season of the year also when rootstock grasses seem to be at their lowest state of vitality. The hay crop too has been secured from the sod land and nothing more is to be produced the current season on these lands; therefore, no crop is lost. If the work is begun on pasture lands, at least a half season of pasturage has been obtained. It is only on sod and pasture lands that it seems to be advisabble to attempt to destroy quack-grass by the method here outlined, as was pointed out in the discussion of the rootstock habits of the grass under varying field conditions.

HOW TO KILL QUACK-GRASS.

The process of killing quack-grass on sod or pasture lands, beginning in midsummer, is a very simple one.

The first step is to plow the sod, cutting just under the turf, which is usually about 3 inches deep. To thoroughly turn over a stiff quack-grass sod as shallow as 3 inches it is advisable to use a special type of plow (Scotch bottom) having a very long, gradually sloping moldboard. It has been found that with this type of plow the sod can be turned very shallow. The next step is to go in a week or ten days later with a disk harrow and thoroughly disk the sod. Repeat this treatment every ten days or two weeks until fall, when the quack-grass will be completely killed out.

It sometimes happens that with certain kinds of soil during drier periods in the summer the ground becomes too hard to plow. With the type of plow suggested, however, it has been found that very hard and dry sods can be turned. In case it is not possible to turn the sod on account of dry weather, the treatment can be given with the disk harrow alone. We have been able to thoroughly kill the grass with either the disk or the combination of plow and disk treatment. Where plowing is possible, however, it is usually cheaper to kill the grass with plow and disk than with the disk alone.

If the disk alone is to be used, it should be set practically straight, well weighted with bags of dirt, and the field gone over three or four times. The first two cuttings should be at right angles and the other cuttings diagonally across. The sod in this way is divided into small blocks. Then the disk is set at an agle, when it will be found that the first 2 or 3 inches of the sod, which contain practically all of the quack-grass roots, can be cut loose from the soil below. The exposure to the sun and the breaking loose from the lower soil soon kill out the quack-grass. This ground should be gone over at intervals of ten days or two weeks thoroughout the remainder of the season.

The following spring the infested land, on which the grass has been killed either by the disking method or by the combination of plowing and disking, should be plowed to a good depth in order to bury the mass of dead roots thoroughly. This will facilitate the cultivation of the spring crop. If the work has been carefully done the quack-grass will not show up at all in the spring crop.

THE CARE OF MILK IN THE HOME.

By George M. Whitaker,

In Charge of Market Milk Investigations, Dairy Division, Bureau of Animal Industry, U. S. Department of Agriculture.

INTRODUCTION.

If the milk producer and the milk dealer have done their duty there is daily left at the consumer's door a bottle of clean, cold, unadulterated milk. By improper treatment in the home the milk may then become unfit for food, especially for babies. This bad treatment consists (1) in placing it in unclean vessels; (2) in exposing it unnecessarily to the air; (3) in failing to keep it cool up to the time of using it; and (4) in exposing it to flies.

Milk absorbs impurities—collects bacteria—whenever it is exposed to the air or placed in unclean vessels. Some of these may be the bacteria of certain contagious diseases; others may cause digestive troubles which in the case of babies may prove fatal. Much of the cholera infantum and summer bowl troubles of infants is due to impure milk. The amount of the contamination depends largely on the condition of the utensils and the air with which the milk comes in contact; the air of even a so-called clean room contains many impurities. The science of bacteriology is raising the standard of cleanliness of utensils. Bacteria which get into the milk from the air or from the vessels multiply rapidly so long as the milk remains warm; that is, at 50° F. or above. At lower temperatures the bacteria either are dormant or increase slowly. Cleanliness and cold are imperative if one would have good milk, although if it is consumed so quickly after production that the bacteria in it do not have time to increase much—say within two or three hours—the importance of cold is lessened. Milk from the grocery store or bakery which is kept in a can, open much of the time, possibly without refrigeration, is dangerous and should be avoided.

The suggestions given here regarding milk apply also to cream.

The best way of buying milk is in bottles. Dipping milk from large cans and pouring it into customers' receptacles on the street, with all the incident exposure to dusty air not always the cleanest, is a bad practice. Drawing milk from the faucet of a retailer's can is almost as bad as dipping, because, although the milk may be exposed to the street air a little less than by the dipping process, it is not kept thoroughly mixed, and some consumers will receive less than their proportion of cream. If situated so that it is impossible to get bottled milk, do not set out overnight an uncovered vessel to collect thousands of bacteria from street dust before milk is put into it. Have the milk delivered personally to some member of the family if possible; if not, set out a bowl covered with a plate, or better still, use a glass preserving jar in which nothing but milk is put. In the latter case use a jar with a glass top, but omit the rubber band. Paper tickets are often more or less soiled; hence if they are used do not put them in the can, bowl, or jar. For the same reason money should not be put in the can.

Take the milk into the house as soon as possible after delivery, particularly in hot weather. Never allow the sun to shine for any length of time on the milk. Sometimes milk delivered as early as 4 a. m. remains out of doors until 9 or 10 o'clock. This is wrong. If it is inconvenient to receive the milk soon after it is delivered, indicate to the driver a sheltered place, or provide a covered box in which the milk bottle or can may be left.

HANDLING AND KEEPING MILK.

On receiving the milk put it in the refrigerator at once and allow it to remain there when not using from it. Except in cold weather milk cannot be properly kept without ice. Unless the milk bottle is in actual contact with the ice it will be colder at the bottom of the refrigerator than in the ice compartment, as the cold air settles rapidly.

Keep milk in the original bottle till needed for immediate consumption; do not pour it into a bowl or pitcher for storage. Carefully wipe or rinse the bottle, especially the mouth, before pouring any milk from it, so that dust or dirt which may have gathered thereon or on the cap will not get into the milk. Do not pour back into the bottle milk which has been exposed to the air by being placed in other vessels. Keep the bottle covered with a paper cap as long as milk is in it and when not actually pouring from it. If the paper cap has been punctured, cover the bottle with an inverted tumbler.

Milk deteriorates by exposure to the air of pantry, kitchen, or nursery. Do not expose uncovered milk in a refrigerator containing food of any kind, not to mention strong-smelling foods like fish, cabbage, or onions. An excellent way of serving milk on the table, from the sanitary standpoint, is in the original bottle; at all events pour out only what will be consumed at one meal.

When milk is received in a bowl or pitcher instead of in a bottle, observe the spirit of the foregoing remarks: Keep the vessel covered; expose uncovered milk to the air of any room as little as possible; do not expose it at all in a refrigerator.

Remember that exposure of milk to the open air invites contamination not only from odors and bacteria-laden dust, but also from flies. These scavengers may convey germs of typhoid fever or other contagious diseases from the sick room or from excreta to the milk.

Records show typhoid epidemics from such a cause, and 100,000 fecal bacteria have been found on a single fly. Flies also frequently convey to milk large numbers of the bateria that cause intestinal disorders in infants; an examination of 414 flies showed an average of 1,250,000 bacteria per fly.

THE REFRIGATOR.

Keep the refrigerator clean and sweet. Personally inspect it at least once a week. See that the outlet for water formed by the melting ice is kept open and that the space under the ice rack is clean. The place where food is kept should be scalded every week; a single drop of spilled milk or a small particle of other neglected food will contaminate a refrigerator in a few days.

CLEANING EMPTY BOTTLES AND UTENSILS.

As soon as a milk bottle is empty rinse it in lukewarm water until it appears clear, then set it bottom up to drain. Do not use it for any other purpose than for milk. There is no objection to the consumer's washing and scalding the milk bottle, but this is unnecessary, as the dealer will wash it again when it reaches his plant. He cannot, however, do this properly if he receives the bottle in a filthy condition, and if you return such a bottle your negligence may result in the subsequent delivery of contaminated milk to some consumer, possibly yourself.

All utensils with which milk comes in contact should be rinsed, washed, and scalded every time they are used. Use fresh water do not wash them in dishwater which has been used for washing other utensils; or wipe them with an ordinary dish towel—it is better to boil in clean water and set them away unwiped.

When a baby is bottle-fed, every time the feeding bottle and nipple are used they should be rinsed in lukewarm water, washed in hot water, to which a small amount of washing soda has been added, and then scalded. Never use a rubber tube between bottle and nipple, or a bottle with corners.

CONTAGIOUS DISEASE.

If a case of typhoid fever, scarlet fever, diphtheria, or other contagious disease breaks out in the family, do not return any bottles to the milk man except with the knowledge of the attending physician and under conditions prescribed by him.

PASTEURIZATION.

While efficient pasteurization destroys disease germs and affords a safeguard against certain dangers, it should not be regarded as an insurance against future contamination of milk, and the foregoing suggestions should be observed in the case of pasteurized milk as well as with ordinary milk. Do not keep milk over twenty-four hours, even if it seems to be sweet, as milk may become unfit for human food before it sours.

THE HOME PASTEURIZATION OF MILK.

BY L. A. ROGERS, BACTERIOLOGIST, DAIRY DIVISION, BUREAUX OF ANIMAL INDUSTRY.

INTRODUCTION.

Milk delivered in the cities in the summer months frequently contains bacteria in such large numbers that it is not a safe food for children, especially for infants whose food consists entirely of milk. In many cities a special milk can be secured, but this is sometimes difficult and always involves additional expense.

Under such circumstances it is advisable to pasteurize all milk consumed by small children. The pasteurization should be done in such a way that disease-producing bacteria as well as those likely to produce intestinal disturbances are destroyed without at the same time injuring the flavor or the nutritive value of the milk. This may be accomplished in the home by the use if a simple improvised outfit.

METHOD OF PASTEURIZATION.

Milk is most conveniently pasteurized in the bottles in which it is delivered. To do this use a small pail with a perforated false bottom. An inverted pie tin with a few holes punched in it will answer this purpose. This will raise the bottles from the bottom of the pail, thus allowing a free circulation of water and preventing bumping of the bottles. Punch a hole through the cap of one of the bottles and insert a thermometer. The ordinary floating type of thermometer is likely to be inaccurate, and if possible a good thermometer with the scale etched on the glass should be used. Set the bottles of milk in the pail and fill the pail with water nearly to the level of the milk. Put the pail on the stove or over a gas flame and heat it until the thermometer in the milk shows not less than 150° nor more than 155° F. The bottles should then be removed from the water and allowed to stand from twenty to thirty minutes. The temperature will fall slowly, but may be held more uniformly by covering the bottles with a towel. The punctured cap should be replaced with a new one, or the bottle should be covered with an inverted cup.

After the milk has been held as directed it should be cooled as quickly and as much as possible by setting in water. To avoid danger of breaking the bottle by too sudden change of temperature, this water should be warm at first. Replace the warm water slowly with cold water. After cooling, milk should in all cases be held at the lowest available temperature.

This method may be employed to retard the souring of milk or cream for ordinary uses. It should be remembered, however, that pasteurization does not destroy all bacteria in milk, and after pasteurization it should be kept cold and in a cleanly manner and used as soon as possible. Cream does not rise as rapidly or separate as completely in pastuerized milk as in raw milk.

FOOD VALUE OF MILK.

BY CAROLINE L. HUNT, EXPERT IN NUTRITION, OFFICE OF EXPERIMENT STATIONS.

INTRODUCTION.

It is a commonplace saying that milk, or to be more specific, cow's milk, is a perfect food. This may be taken to mean that it contains, first, materials which children need for growth second, materials which young and old alike need for the repair of their bodily machinery; and, third, materials which both need for fuel, i. e., to provide them with heat and with the energy necessary for work. It should not be understood, however, to mean that it has these ingredients in such proportions that it can serve satisfactorily as an exclusive food for a grown person or even for a child. Though it is the best substitute for mother's milk, it must be "modified" more or less before it can be used even for infant feeding with good results.

It is likewise a commonplace saying that milk is a cheap as well as a nutritious food. Just at present with prices of all kinds of foods rapidly changing it is not so easy as it once was to make the comparisons that are necessary to show which particular foods are really cheap, but while the prices of food materials vary the cmposition of most of them remains unchanged, and it is always possible to compare their nutritive values. A quart of milk supplies practically as much of both protein and energy as three-quarters of a pound of beef of average composition or eight average eggs, and can generally be bought for less money. In case milk is 8 cents a quart, beef 20 cents a pound, and eggs 24 cents a dozen, 10 cents spent for milk will buy a little more protein and much more enery than 10 cents spent for beef or 10 cents spent for eggs. Thus, while other animal foods than milk (meat, eggs, and cheese) are desirable to give variety to the diet it may be assumed that milk may be used as an economical substitute for any one of them.

Of the vegetable foods, many (flour, for example) are found to be much cheaper than milk when both price and nutritive value are taken into consideration, and as a matter of fact they always form the greater part of the bulk of human food; but of the animal foods which are usually combined with the vegetable foods, milk is one of the cheapest.

CARE OF MILK AND ITS USE IN THE HOME.

In spite of the fact that milk is recognized as a nutritious and a cheap food, there seems to be a general tendency to think of it not as a possible substitute for other more expensive foods, but rather as an addition to the bill of fare. To illustrate, milk is frequently used as a beverage, without the reduction of the amount of meat or other proteid foods served. From the point of view of the need of the body this may be considered extravagant and the serving of a glass of milk or of a bowlful of soup or of such desserts as custards and baked milk, or the use of generous quantities of milk or white sauce on vegetables offers an opportunity to cut down the allowance of meats and eggs.

THE COMPOSITION OF MILK.

The tendency to think of milk as a beverage rather than as an important source of food comes partly, no doubt, from the fact that it is a liquid rather than a solid and that most liquid foods, such as clear soup, coffee, and tea, contain very little that feeds the body. It is natural therefore, to associate milk with these rather than with the really nourishing food materials. In order to overcome this tendency it is well to study the solid products of milk as they are obtained by various processes familiar in the dairy and in the kitchen as well as in the laboratory. Before doing this it may be helpful to get an idea of the classes into which the solids contained in milk are divided. These are: (1) Proteids, (2) fats, (3) sugar, and (4) mineral matter. The fat and sugar serve as fuel and the mineral matter is chiefly valuable for the making of bones and teeth and other physiological purposes. The proteids serve as fuel like the fats and sugar, but they are used also to make and to repair the muscular tissues of the body. This double usefulness indicates why proteids are so often referred to as the most important part of milk.

Fat constitutes about 4 per cent of the weight of milk. All are familiar with the common process of butter making by which the greater part of the fat is separated from the other ingredients. The liquid which remains and which is called buttermilk contains the rest of the nutrients of the milk except the small portions which cling to the fat. On examining buttermilk after it has become a little sour, it may be seen that it contains a white solid which in the process of churning has been divided into very small particles. This solid is casein, the chief proteid of the milk. It constitutes 3.3 per cent, or about one-thirtieth of the weight of the milk.

The familiar process of the souring of the milk also helps to an understanding of its composition. When this takes place the casein and most of the fat separate from the whey and form what is known as the curd. When, however, the attempt is made to separate the curd completely for the purpose of making cottage cheese, much of the fat is usually carried off with the whey. This is particularly true if the curd is strained while warm. It may therefore be in place here to suggest that after sour milk has been scalded for the purpose of making cottage cheese it is well to chill it thoroughly before straining. Through very common processes, those of butter and cheese making, one may become familiar with the solid known as casein and with the fat of milk. But the clear whey which may be separated from the curd also has important solids in it and with these one seldom has a chance to become acquainted. The following simple experiment may be carried out with the ordinary dishes in use in the kitchen:

Separate a portion of whey from the curd of sour milk, and, if necessary to make it perfectly clear, strain through a piece of fine cloth without previously heating. Examine to see that there are no solid particles in it. Divide into two parts. Heat one part to the boiling point, and when cool pour into a glass, examine, and compare with the unheated portion. The part that has been heated will be seen to be full of small particles of a white solid which soon sink to the bottom of the liquid. This is albumen, a substance always present in cows milk, though in very much smaller amount than the casein. It resembles the albumen of the white of an egg. It differs from the casein in not curding when the milk sours and in remaining in solution in the whey. Furthermore, it does not form curd in the stomach. This experiment is particularly important to those who wish to understand milk in its relation to the feeding of babies. The proteid which by the process of heating is shown to be present in the whey is the chief proteid of human milk, while in cows milk, as has been said, it is found in very much smaller amount than the curding proteid. Cows milk, therefore, can never be a perfect equivalent for human milk in infant feeding, even if diluted and modified, though it may be the best available substitute for it. It is easy to understand that a baby may be able to digest a proteid which remains dissolved in the whey more easily than one which curds soon after reaching the stomach.

To continue the experiment with milk, strain the whey which has been heated and again get a clear liquid. Pour this into a double boiler over water and heat until it is dry. There will be left a solid sugary mass. Place some of this in an old spoon or on a piece of tin or sheet iron and burn. Notice the characeristic odor of charred sugar. Milk contains 5 per cent of sugar. This sugar is not exactly like the sugar used on the table. It is much less sweet and physiologists and chemists find that it acts differently from ordinary sugar during the process of digestion. For this reason the sugar used in preparing a baby's food should never be granulated sugar, but milk sugar, which can be bought at the druggist's.

If it is possible to get the spoon in which the sugar is heated sufficiently hot to burn the sugar completely, it will be discovered that there remains behind a small portion of white powder, which the most intense heat does not consume. This is the mineral matter of the milk. It constitutes about seven-tenths of 1 per cent of its weight, and it is more abundant in comparison with other nutrients than in any other common food. It is easy, of course, to see why this material which builds the bone should be in the food primarily designed for the use of young animals.

Thus by simple and interesting processes, fat, casein, albumen, sugar, and minerals may be separated and milk may be shown to be a mixture of many valuable solids either suspended or dissolved in water. Such experimenting shows, too, why it is that no other liquid is regarded as a true substitute for milk in the feeding of young children. No attempt will be made in this bulletin to give exact directions for the modification of milk for feeding babies because this varies with individual cases and is a matter which should be regulated by the physician or other person with expert knowledge. Many valuable books give such directions for children of various ages and such books may prove very helpful to the mother and the nurse. A careful consideration, however, of the facts that have been given here about the different solids in milk should make it possible for a person to follow the directions for modifying milk more intelligently and to understand better the reasons for the varying proportions given in the formulas for infant feeding.

ECONOMICAL USE OF MILK.

In order to make plain what is meant by the statement which occurs above, that it is very often economical to serve milk in place of other foods, but extravagant to add it to a meal which from the point of view of nourishment is already adequate, the following menu is given which may be called a "milkless" bill of fare, as no milk is supplied, except in so far as it enters into the composition of the cake or other dishes:

Breakfast—Oranges, eggs on toast, coffee with cream.

Luncheon—Cold lamb, potato salad, tea, bread and butter, preserves, and plain cake.

Dinner—Sirloin steak, potatoes, asparagus, bread and butter, strawberry shortcake.

The nourishment in such a bill of fare, which has been selected not because it is any more desirable than a thousand others which might have been chosen, but merely to give something to discuss, would of course depend on the size of the portions served. For the purpose of giving some idea of how large the portions should be, let us imagine that the family being served consists of a man, a woman, a boy of 15, and a girl of 12. It is quite generally agreed that this family would usually eat and would, in fact, need about 3.3 as much food as one man would need. Without going into all the figures, it may be considered that such a family would get enough nourishment from the above bill of fare, if the amounts of food used per day were 2 pounds of meat, 1½ pounds of flour, ¾ pound of butter (or of butter and other fats, oil, or drippings), 1 pint of cream, 6 eggs, ¾ pound of sugar, 4 oranges, 2 pounds of potatoes, 1 bunch of asparagus, 1 box of berries and 1 pint of canned fruit. These materials would supply the required fuel and would give 11½ ounces of proteids, the amount usually considered to be needed each day by the family of the size given above. The cost of food materials, in case meat is 20 cents a pound, butter 40 cents, eggs 24 cents a dozen, coffee 35 cents a pound, cream 20 cents a pint, oranges 30 cents a dozen, potatoes $1 a bushel, asparagus 15 cents a bunch, nad strawberries 15 cents a box, would be not far from $1.60.

If milk were taken as a beverage in addition to the other materials in this bill of fare, every quart so used would increase the proteids unnecessarily by more than an ounce. When it is considered that the entire allowance for the 4 people per day is only 11½ ounces, it will be seen that this addition is quite significant. The addition of a quart of milk would raise the cost of the food by 8 or 9 cents. A glass of milk taken as a beverage at each meal by every person, amounting to 3 quarts per day, would add 3½ ounces of proteids to the daily diet and 27 cents to the cost of the food materials for the entire family.

But if, instead of adding the milk to the other foods, it were substituted for some of them, and 3 quarts of milk were purchased intead of half a pint of cream, it could either be used as a beverage or it would supply one-half pint of cream for tea and coffee, 1 pint of half milk and half cream for use on cereals or puddings, and 2¼ quarts of skimmed milk for cooking. A bill of fare which would utilize this milk is as follows:

Breakfast—Oranges, oatmeal with half milk and half cream, coffee with cream.

Luncheon—Eggs on toast, lettuce, bread and butter, tea, old-fashioned rice pudding (1 quart of milk, ¼ cup sugar, ¼ cup of rice, flavoring).

Dinner—Cream of tomato soup, sirloin steak, creamed potatoes, strawberry shortcake.

So far as the nutritive value is concerned, the milk with the addition of the small amounts of oatmeal and the rice contained in this bill of fare would take the place of the cream, part of the potatoes, 1 pound of meat, the preserves, and the cake of the first bill of fare. Using the same sort of data with respect to food prices, the computed cost of the second bill of fare would be about 23 cents less than that of the first.

The above is one specific example taken merely for purposes of illustration of the way in which milk may be substituted for other foods. In general, in making this substituion, the fact given on another page that a quart of milk is equal in nutritive value to three-fourths of a pound of beef or 8 eggs should be kept in mind. Or, to give the equivalnet in smaller amounts, a cup of milk is equal to 3 ounces of lean beef or 2 eggs in total nourishment.

FOOD VALUE OF SKIM MILK.

It is natural to ask if skim milk is as valuable a food as whole milk. In answering this question several points must be taken into consideration, some of which have been touched upon in the first part of the bulletin. Freshness and cleanliness must be considered as well as composition. Milk which has been received from the milkman and allowed to stand long enough to skim should probably never be given to children under 2 years of age. For older people the mere fact of its being old need not be taken into consideration. If skim milk is bought as such, however, it should always be thoroughly cooked, unless it is known to have been handled carefully and to be clean. So far as its nutritive value is concerned it has a trifle more protein, volume for volume, than whole milk, the per cent being 3.4 instead of 3.3.

Skim milk seems to some people rather thin for use as a beverage, but others value it for this very quality. If it is allowed to stand until it sours and is then churned or beaten until the curd is broken up into small particles, it makes a familiar and wholesome drink, often used under the name of buttermilk, for much of the commercial buttermilk is thus made from skim milk, some cream or butter fat being sometimes added. For cooking, the lack of fat and any consequent lack of flavor can be easily made up, as butter or less expensive fats can be used with it. Pork and bacon fat make a particularly savory addition.

In the very interesting experiment of serving penny luncheons to anemic children in the Boston schools, one of the combinations of food that it was found possible to sell for the low price of 1 cent was skimmed milk and bread and butter. In an experiment, made in Birmingham, England, where an effort was made to serve food economically to underfed children, cocoa made with skimmed milk was served.

The following suggest ways in which milk may be used in the diet applied to skim as well as whole milk.

MILK SOUPS.

A large variety of soups may be made the means of utilizing not only milk, but also left-over portions of vegetables and other foods. In making them allow from one-half to 1 level tablespoonful of flour to each cup of liquid (including milk and the juice and pulp of vegetables) and 1 level tablespoon or more of butter or other fat. Some of the flavorings which may be used are: Onions, corn, asparagus, cabbage, cauliflower, peas, beans, tomatoes, salmon or other fish, celery, spinach, or grated cheese.

MILK CHOWDER.

Chowders are also a very acceptable means of serving milk. In making rich chowders the proportions used are: Two cups of milk or of milk and water, 1 cup of potatoes cut into small pieces, and 1 pound of fish. The flavoring is onions and fat tried from salt pork. While these proportions make a rich dish, it is possible to reduce the amount of fish greatly, to leave it out entirely, to use small portions of left-over fish or some salt codfish which has been freshened, or to substitute corn for it. Such dishes are palatable and of reasonably high nutritive value providing the greater part of the liquid used is milk.

MILK GRAVIES.

A great variety of milk gravies, thickened with flour and enriched with butter or other fat, may be served with potatoes or other vegetables or poured over toast. The proportions are 2 level tablespoonfuls of flour and 2 level tablespoonfuls of butter to 1 cup of milk. To this may be added chipped beef, codfish or other fresh or salt fish, hard-boiled eggs, small portions of chicken or veal or grated cheese. Milk gravy flavored with cheese makes a good and very nutritious sauce to pour over cauliflower and cabbage or to serve with boiled rice or hominy.

A very good way to serve milk toast is to toast bread very thoroughly and to pour hot milk over it at the time of serving. In serving milk toast in this way all the dishes should be kept very hot. A heavy earthenware pitcher may be used for serving the hot milk, as it retains heat for a long time.

Sour milk is used to a large extent in cookery and the sour milk itself, or more commonly the sour-milk curd, is considered by many persons a palatable and wholesome dish. Sour cream is also used in many ways in the household in the making of sauces and dressings and in cookery.

Perhaps the most common name in the United States for the freshly separated skim-milk curd is cottage cheese, though other names, for instance, schmierkase, are also well known.

Cottage cheese contains all the proteids of milk and part of the fat. It is made either by heating the curd slightly and straining or by straining it without heating. If any heat is used, it should be very gentle or the curd will become hard and unpalatable. A safe way of heating is to pour boiling water into the curd. This is a good way also for those who do not care for the taste of lactic acid, for the hot water serves to remove part of this.

Cottage cheese would probably be a more popular dish if it were served in a greater variety of ways. For many palates it needs to be enriched with a little butter or cream. The French variety, to which reference was made, is commonly served with sugar and cream, and a similar dish is eaten in the United States, often being seasoned with a little ground cinnamon or nutmeg.

Cottage cheese is always a good addition to or accompaniment of salads. A good luncheon which can be served in one course consists of cottage cheese in which the first portions are eaten with dressed lettuce or water cress, and the last portion with a little of some rather sweet fruit preserve, such as strawberry or raspberry jam or preserved quinces. Served with bread and butter and tea this makes a well balanced meal.

Cottage cheese flavored in different ways may be used for sandwiches. In busy households it may be well to prepare the filling and to allow the various members of the family to make their own sandwiches at the table. Caraway seeds, chopped stuffed olives of different sorts, and chives (a vegetable which may be easily grown in the kitchen window as well as the kitchen garden) make good flavors. Instead of the different kinds of stuffed olives, plain olives and pimentos may be chopped separately and added, but this requires more work.

The question is likely to arise why sour milk and its products are considered safe food to be eaten raw while stale sweet milk is looked upon with some suspicion unless it has been cooked. The reason is that for a long time after the milk is drawn all the bacteria which enter into it increase in number, the increase being more or less rapid, depending chiefly on the temperature at which the milk is kept. Some of these bacteria may be kinds that produce disease. Finally, however, when milk sours the harmless lactic-acid bacteria and the lactic acid which they produce tend to destroy other micro-organisms, including the disease-producing bacteria, so that the time comes when the harmful bacteria decrease very rapidly and the lactic-acid bacteria increase very rapidly. By the time the milk is sour it is practically free from bacteria, except those of the lactic-acid type.

SWEET CURDS.

Sweet curds may be made into a good filling for pies or tarts. The curd is obtained by adding rennet to warm milk and allowing the milk to stand until it hardens. The curd is then broken up and strained. To the curd from 1 quart of milk add 1 level tablespoonful of butter, one-quarter of a cup of sugar, the yolks of 2 eggs, and a few Zatne currants or chopped raisins, and a little nutmeg. In earlier times, the sweet curd from cheese making was much used as a food, but is not common today, though sometimes served where it can be readily obtained from a cheese factory. Whey was also much used in earlier times and is still a favorite beverage with many and employed especially in invalid dietetics.

MILK DESSERTS.

Junket served very cold is a refreshing dessert in hot weather, as are the numerous milk sherberts, frozen custards, and similar desserts in which milk is used. Baked milk, made by cooking sweetened and flavored milk for a long time in a slow oven, is also good. Many different kinds of puddings are made by baking milk with cereals and either molasses or sugar. The cereal may be rice, corn meal, or buttered white or whole-wheat bread. In this class of food belongs, so far as nourishment is concerned, the scalloped potatoes made by cooking sliced raw potatoes for a long time in a large amount of milk.

BUTTERMILK.

As a wholesome and nutritious food buttermilk is also valuable. It has 3 per cent of proteids, and a quart contains one-fourth as much proteid as a man needs in a day, even if the most liberal estimate of his needs is taken. It is said to possess hygenic value as well, the theory being that lactic-acid bacteria may grow in the intestines, crowding out other and undesirable kinds.

Though not much different in nutritive value, buttermilk obtained as a by-product in butter making has a different quality or texture and a different flavor from so-called skimmilk buttermilk referred to above.

SUMMARY.

Milk and milk products are wholesome and economical foods, which may readily be used in quantity in the diet.

Quality and cleanliness in handling are important topics which must be considered, as well as food value.

A few examples have been given of the use of milk, skim milk, milk curd, and buttermilk in the home. Others will readily suggest themselves to the housewife.

A SYSTEM OF POULTRY ACCOUNTING.

BY ROB R. SLOCUM, ANIMAL HUSBANDMAN IN POULTRY INVESTIGATIONS, ANIMAL HUSBANDRY DIVISION, U. S. DEPARTMENT OF AGRICULTURE.

One of the greatest needs of most poultry keepers is a definite record of expenditures and receipts. In too few cases does the owner of a poultry flock actually know whether his fowls have been an expense to him or have paid a profit. This is perhaps truer in regard to poultry than with most other branches of animal industry, because of the facts that both expenditures and receipts are spread over the entire year and are individually small, that a large part of the product is used at home, and that the poultry keeping is incidental to the other farm work.

An effort is made to give in this circular, in the simplest form possible, a system of keeping an account of the poultry flock which will enable the owner to determine its status at the end of each year.

The different blanks or forms necessary are the following: Monthly sheet, yearly summary sheet, inventory sheet, balance sheet, and egg record. A sample sheet of each kind has been filled out for guidance in keeping such a record, except in the case of the egg record. These forms or blanks can be ruled off on ordinary loose sheets of paper or in a blank book. The latter plan will usually be found more desirable as it prevents the different sheets from becoming scattered. When separate sheets are used they should be, for convenience, not less than 8 by 10 inches. When a blank book is used, one page can be used as the debit side of the sheet and the opposite page as the credit side, which will allow the use of a smaller book.

On the monthly sheet, one of which is used for each month in the year, all eggs and chickens used at home should be credited to the flock at regular market value. Eggs used for hatching at home should be both credited to and debited against the flock at the same price. This price should be their ordinary market value, unless the demand for eggs for hatching purposes is so great that all suitable eggs can be disposed of in this way; in that case the price should be the regular rate obtained for hatching eggs. The labor of the owner can be estimated and charged against the flock each month if desired. The balance at the end of the year will then show the net profit of the flock. If only the extra labor which may be employed from time to time is charged, then the balance at the end of the year will represent the payment which the flock has made for the owner's labor. Under the column headed "Equipment" on the monthly sheet should be charged such purchases as incubators, brooders, etc. Lumber, roofing paper, glass, etc., should be charged under "Miscellaneous." Any day-old chicks sold would most properly be credited under "Breeding stock."

The yearly summary sheet consists, as its name indicates, merely of a summary of the monthly totals of expenditures and receipts for the year.

The inventory sheet should be used at the beginning of each year to take complete inventories of the equipment, stock, feed, etc. Each piece of equipment should be listed at its actual value at that time. In the case of buildings which are substantially constructed, 5 per cent deterioration should be sufficient to allow for the passage of a year's time. In case repairs have been made, the actual value of the building as repaired should be given and would probably overcome the deterioration and might even enhance the value over its value in the previous inventory. The deterioration on incubators, etc., with good care, should be about 10 per cent. The actual value of stock on hand should be given. The value may represent market value or its value as breeding stock. In the inventory, the feed on hand purchased or set aside for the poultry should be included. The time of taking the inventory, or the beginning of the year, need not be taken as January 1. Any other date may be chosen if deemed more suitable. Some poultry keepers prefer October 1 or November 1 as representing more truly the beginning of the poultry year.

The balance sheet will be understood by consulting the sample sheet given. This sheet shows the actual status of the flock for the year.

A simple egg record for the year is also given in blank. It will be found desirable to keep this record in connection with the account, as it will enable the poultry keeper to check up the number of eggs used at home, and thus be sure to credit the flock with them. Columns headed "Average number of hens" and "Average egg production" are also given and can be used if desired. By keeping these two columns one is enabled to check up the performance of the hens and determine whether they are giving a satisfactory egg yield.

The "average number of hens" can be easily determined if a record is made of the deaths each month. The exact average number would be determined as follows: Suppose that in a thirty day month there were 40 hens at the beginning of the month, that one died on the 8th and two on the 19th. For the first eight days there were 40 hens, for the next eleven days there were 39 hens, and for the last eleven days there were 37. Therefore, the average number of hens equals

$$\frac{(8\times40)\times(11\times39)+(11\times37)}{30}=38.5$$

An approximate average number of hens generally close enough for practical purposes can be obtained by taking the average between the number of hens at the beginning and the end of the month.

Having determined the "average number of hens," the "average egg production" is readily found by dividing the total number of eggs produced by the average number of hens.

Inventory January 1, 1910.

1 henhouse, 15 by 30 feet	$100.00
1 240-egg incubator	25.00
2 indoor brooders	16.00
2 colony houses, 8 by 8 feet each	40.00
Miscellaneous—feed troughs, pails, pans, etc	10.00
1 bushel wheat	1.25
1 bushel corn	.80

100 pounds beef scrap	3.00
150 pounds bran	2.25
50 barred Plymouth Rock hens	50.00
50 barred Plymouth Rock pullets	75.00
5 barred Plymouth Rock cock birds	10.00
7 barred Plymouth Rock cockerels	14.00
Total	$347.30

Inventory January 1, 1911.

1 henhouse, 15 by 30 feet; 5 per cent deterioration	$ 95.00
1 240-egg incubator; 10 per cent deterioration	22.50
1 150-egg incubator, new	18.00
2 indoor brooders; 10 per cent deterioration	14.40
1 indoor brooder, new	8.00
2 colony houses, 8 by 8 feet each, repaired; no deterioration	40.00
Miscellaneous—feed troughs, pails, pans, etc	10.00
2 bushels wheat	2.40
1 bushel oats	.60
100 pounds bran	1.50
50 pounds beef scrap	1.50
27 Barred Plymouth Rock hens	27.00
95 Barred Plymouth Rock pullets	142.50
2 Barred Plymouth Rock cock birds	4.00
12 Barred Plymouth Rock cockerels	24.00
Total	$431.40

MONTHLY SUMMARY SHEET

DR.

Date	Item	Feed	Equipment	Labor	Miscellaneous		Total
1910.							
Apr. [illegible]	100 pounds beef scrap	$3.00					$3.00
5	4 bushels shelled corn	3.00					3.00
5	5 bushels oats	3.25					3.25
5	Carpenter work on brooder			$2.00			2.00
8	Lumber				$4.00		4.00
10	1 indoor brooder		$8.00				8.00
10	5 gallons kerosene				.72		.72
19	300 eggs for hatching				5.75		5.75
26	100 pounds oyster shell	.80					.80
26	3 bushels wheat	3.75					3.75
	Total	$13.80	$8.00	$2.00	$10.47		$34.27

CR.

Date	Item	Market eggs	Hatching eggs	Market poultry	Breeding stock		Total
1910.							
Apr. 4	10 doz. eggs at 24 cents	$2.40					$2.40
10	1 pen breeding fowls				$5.00		5.00
12	18 doz. eggs at 24 cents	4.32					4.32
13	1 hen (home use)			$0.55			.55
14	3 market hens			1.80			1.80
15	8 doz. eggs (home use) at 24 cents	1.92					1.92
17	15 doz. eggs at 23 cents	3.45					3.45
19	7 doz. eggs (home use) at 23 cents	1.61					1.61
19	300 eggs, hatching (home use)		$5.75				5.75
20	50 day-old chicks				3.00		3.00
23	7 doz. eggs (home use) at 23 cents	1.61					1.61
29	100 eggs, hatching		3.00				3.00
30	6 doz. eggs, at 22 cents	1.32					1.32
	Total	$16.63	$8.75	$2.35	$8.00		$35.73

YEARLY SUMMARY SHEET.

Dr. **Cr.**

Date	Feed	Equipment	Labor	Miscellaneous		Total	Market eggs	Hatching eggs	Market poultry	Breeding stock		Total
1910												
January	$ 11.25	$18.00	------	$ 2.45	------	$ 31.70	$ 21.65	------	$ 2.35	------	------	$ 24.00
February	10.85	------	$ 2.00	2.00	------	14.85	24.83	------	3.30	------	------	28.13
March	11.50	20.00	------	9.90	------	41.40	20.66	$ 6.50	3.50	$10.00	------	40.66
April	13.80	8.00	2.00	10.47	------	34.27	16.63	8.75	2.35	8.00	------	35.73
May	13.00	------	------	5.35	------	18.35	11.52	4.50	4.25	8.00	------	28.27
June	15.50	------	2.50	5.45	------	23.45	6.00	5.75	15.20	10.00	------	36.95
July	14.15	------	------	1.10	------	15.25	7.08	2.00	22.15	8.00	------	39.23
August	13.80	------	------	4.95	------	18.75	5.37	------	13.90	4.00	------	23.27
September	15.00	------	2.25	.45	------	17.70	9.10	------	10.80	2.00	------	22.90
October	16.10	------	------	2.75	------	18.85	8.60	------	4.40	9.00	------	22.00
November	4.80	------	1.00	1.43	------	17.23	8.17	------	7.85	15.00	------	31.02
December	13.75	------	------	8.15	------	21.90	12.56	------	4.05	20.00	------	36.61
Total	$163.50	$46.00	$ 9.75	$54.45	------	$273.70	$152.17	$27.50	$94.10	$95.00	------	$368.77

YEARLY EGG RECORD.

Day of Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
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24												
25												
26												
27												
28												
29												
30												
31												
Total												
Average number of hens												
Average egg production												

BALANCE SHEET.

	Dr.	Cr.	Bal.
Value of inventory January 1, 1910	$ 347.30		
Interest at 6 per cent on capital invested, as represented by value of inventory above	20.84		
Expenditures during 1910	273.70		
Value of inventory January 1, 1911		$ 431.40	
Receipts during 1910		368.77	
Total	$ 641.84	$ 800.17	
Balance			$ 158.33

Approved:
JAMES WILSON,
Secretary of Agriculture.
Washington, D. C., *January* 26, 1911.

COW-TESTING ASSOCIATIONS.

HELMER RABILD, U. S. DEPARTMENT OF AGRICULTURE.

ORIGIN.

The cow-testing movement in connection with dairying originated in Denmark and was a direct result of necessity. That little country during the latter part of the nineteenth century passed through a financial crisis, the result of which was a reorganization of agricultural activity. Destructive and expensive wars had drained the resources of the country and increased the national debt, and the farmer, upon whom fell the burden of taxation, was forced to follow that system of agriculture which promised the highest possible returns. Beef production had become unprofitable by reason of increased land values and discrimination in foreign markets. The good standing of Danish butter and the prices paid for it on the English market gave promise that dairying, if properly developed, might furnish a good source of revenue, and this industry, which previously had been carried on in an indifferent way, began to assume greater importance. It received a great stimulus by the organization of a few co-operative creameries, the first of which was organized in the year 1882. The cows on the farms had not been selected for dairy purposes, the average production of butter per cow in 1884 being only 112 pounds a year, and the farmer soon learned that more productive cows were an absolute necessity if he would derive any profit from the business. Some importations of dairy cattle of foreign breeds were made. These importations, however, brought, in many cases, disappointment and loss and were soon discontinued, and the farmers began, by studying the individuality of their native cows, to breed a strain of cattle which were especially suited for dairy purposes.

The cow testing movement began in 1892, when State Counselor B. Boggild, at a meeting of the Kildebrond creamery patrons in July of that year, explained how records of the individual performances of the cows could be obtained, and the result was that 14 farmers agreed to weigh the milk from each cow and send samples of it to the creamery. The creamery manager, Mr. Hansen, determined its richness by the Fjord centrifugal cream tester and published the record of the milk and butter yield from each cow, as well as the feed consumed. Shortly thereafter, and as a result of this, those men who had kept records formed the Kildebrond Bull Association, with the object of improving their herds.

State Counselor Frederik Hansen, a dairy expert employed by the government and the owner of a dairy farm, had for several years studied the richness of the milk of individual cows by occasionally taking samples to the creamery for testing, and he had begun weeding out the animals in his herd which gave poor milk, thereby increasing the richness of the herd's milk. His neighbors who sent milk to the same creamery, noticing the increase in richness of the milk from his herd, began to inquire into the cause of it, and when sufficient interest had developed Mrs. Hansen, his wife, suggested that an association be formed in the neighborhood for the purpose of investigating the richness of the milk of individual cows and the economy of their production, so that each member of this association might obtain the same benefit that Mr. Hansen had derived from such investigations.

A meeting was called for this purpose January 23, 1895, on the farm of Soren Peter Knudsen, at Lille Skovgaard, Vejen, and the first cooperative cow-testing association was organized A dairy expert was employed to make examination of the richness of the milk with the Gerber butyrometer and keep the milk and feed records. Active operations began May 1, 1895, with 13 members, and so satisfactory have been the results that the association now numbers 24 members, with 522 cows, and employs two men as cow testers.

GROWTH OF THE MOVEMENT.

Another association was organized later during the same year, and since then the movement has grown wonderfully. From Denmark it has spread to other European countries.

The following table shows the growth of the cow-testing movement in Europe. The figures given show the number of associations in the various countries, by years:

NUMBER OF COW-TESTING ASSOCIATIONS ANNUALLY IN OPERATION IN EUROPEAN COUNTRIES 1895 TO 1909.

Year	Denmark	Germany	Sweden	Norway	Finland	Holland	Russia	Scotland
1895	2							
1896	15							
1897	30	1						
1898	88	2	1	2				
1899	170	3	8	6	1			
1900	219	4	28	19	2			
1901	260	9	71	60	3			
1902	307	18	136	108	4			
1903	362	29	188	137	7		*a* 1	4
1904	415	63	270	145	11	*b* 36	(*a*)	1
1905	448	63	333	139	17		(*a*)	2
1906	479	63	413	142	38		(*a*)	5
1907	479	63	486	145	64	86	(*a*)	7
1908	508	207	593	146	83	(*c*)	(*a*)	13
1909	530	207	662	146	99	(*c*)	*d* 52	13

a Organization in Russia began in 1903; number of associations organized subsequently is not known.
b Number organized up to 1904.
c The development of these associations has continued, but figures are not available.
d Approximate number in existence.

PURPOSE AND PLAN OF THE ASSOCIATION.

The primary purpose of the cow-testing movement was to obtain records of the yearly production of milk and butter from each individual cow in the herds of the members, and with these data as a basis, by the selection of the best producing cows for breeding purposes, to develop a strain of cows which would produce a large quantity of milk rich in butterfat. Later it was found that to judge the quality of the individuals it was necessary in addition to keep account of the amount of feed consumed by each cow, in order to learn which of them utilized the feed to the best advantage. Many of these associations do not take into consideration the cost of the feed nor the price of products, but use the feed-unit system for this determination. By the feed-unit system the nutritive values of all feeds are reduced to a common basis, and that cow is considered best which combines the greatest yield of milk per 100 feed units with the largest production of butterfat.

It was not long before the work was extended to include also the cost of feeding and raising calves and young stock, of producing pork, and of keeping horses. It has even been extended to the keeping of records of yields of different fields with different crops, and much good has thus been accomplished, as the records furnish a good basis for comparing different systems of farm management, cultivation, crop rotation, etc.

The cow-testing associations of Denmark have on an average 22 members each and 390 cows. Each association employs an expert dairyman to make periodical visits to the farms of the members. At each visit he remains twenty-four hours, and obtains records, by actual weighing and testing, of the amount of feed consumed by each animal and the amount of milk and butterfat each cow yields during the twenty-four hours he is at the farm. With these data as a basis, he calculates the amount of feed each cow consumes for the entire year, as well as the amount of milk and butter she produces.

In case the association keeps records of other animal production, the cow tester obtains from the farmer information with reference to the amount of feed consumed by each animal, thus ascertaining the feed cost of keeping the animal; and by making occasional weighings of the animal the cost of producing one pound of gain is determined. Where records are kept of the growing of crops the cow-tester ascertains from the farmer the total yield of a crop, as well as the total acreage, and calculates the yield per acre. If the grain has been sold, receipts must be shown for its delivery. By applying the total sum of expense in connection with the growing of the crop the cost of producing one bushel is calculated.

IMPROVEMENT AS SHOWN BY RECORDS.

Records of the first year's work of the cow-testing associations are not obtainable, but the method soon grew so much in importance and popularity that it was recognized by the government and appropriations were made for promoting it. This assistance made it possible to collect the records of the various associations. Many of these records show very decided increases in average yield, and they furnish interesting material for study.

The following table shows the improvement in a herd owned by Mr. August Kinch at Beltaberga, Sweden:

RECORD OF A DAIRY HERD IN SWEDEN.

Testing Period (365 days)	Average number of cows in herd	Average milk yield per cow —Pounds	Average fat test of herd—Per ct.	Average butter yield yer cow—Pounds	Average feed units consumed per cow [a]	100 feed units gave		Cost to produce 100 pounds of milk—Cents	Cost to produce 1 pound of butter—Cents
						Milk—Lbs.	Butter—Lbs.		
1899-1900	70	7,320	3.05	245	2,421	302	10.1	86.0	25.7
1900-1901	28	7,905	3.13	272	2,695	293	10.1	88.6	25.7
1901-2	46	9,003	3.20	317	2,566	350	12.3	74.1	21.1
1902-3	55	9,984	3.18	350	2,507	398	13.9	65.3	18.6
1903-4	61	10,584	3.22	376	2,587	407	14.5	63.5	17.9
1904-5	64	11,236	3.22	399	2,743	409	14.5	63.5	17.9
1905-6	71	11,333	3.21	401	3,035	372	13.2	69.6	19.7
1906-7	79	11,486	3.18	403	3,111	369	13.0	70.4	20.1
1907-8	77	11,023	3.17	385	3,075	358	12.5	72.5	20.8
1908-9	79	11,399	3.34	421	3,051	374	13.8	69.6	18.8
Increased (+) or decreased (—)	--------	+4,079	+0.29	+176	+630	+72	+3.7	—16.4	—6.9

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[a] One Swedish feed-unit equals—1 kilogram (2.2 pounds) mixed grain; 1.2 kilogram (2.6 pounds) dried beet pulp; 1 kilogram (2.2 pounds) gluten feed; 2.5 kilograms (5.5 pounds) hay; 1.1 kilograms (2.4 pounds) wheat bran; 4 to 6 kilagrams (9 to 13 pounds) straw; 0.9 kilogram (2 pounds) linseed cake; 6 to 10 kilograms (13 to 22 pounds) green clover; 0.8 kilogram (1.8 pounds) cotton-seed cake; 11 to 15 kilograms (24 to 33 pounds) turnips.

Mr. Kinch joined the cow-testing association in 1899. It will be noticed that he had 70 cows. The first year's testing revealed the fact that only 28 of them possessed sufficient merit to be deemed fit for breeding purposes, and the remainder of the herd was disposed of. The heifers of these 28 cows were raised and added to the herd, which kept increasing in numbers until in the seventh year it contained one more cow than in the first year. The increased yields shown in this table were accomplished by the selection of cows of large and economical production, and their progeny, combined with the use of improved sires. Naturally, with increasing production, the cows consumed more feed, something an owner can look at with satisfaction when he sees, as in this case, a gradual increase in yield per 100 feed units and a correspondingly satisfactory decrease in the cost of production. Assuming a cost of 2.6 cents for each feed unit and a price of 30 cents a pound for butter, the extra clear profit from 70 cows the last year was $2,549.40 more than it was the first year, when Mr. Kinch joined the cow-testing association. The cost of obtaining these records was less than $1 per cow, or less than $70 a year; and, assuming that the cost of purchasing good sires was offset by the increased commercial value of the herd, it means that an outlay of less than $70 a year brought an income of $2,549.40.

Assuming that the profit from the cows could be applied to pay off the mortgage on a farm, a man with a herd of 70 cows like those owned by Mr. Kinch in 1900 could pay off a mortgage of $10,000.00 in 29 years; while the profits from 70 cows such as those owned by Mr. Kinch in 1909 would pay this mortgage in less than four years.

The following table shows the result of ten years' testing in the Lundatrakten Cow-Testing Association in Sweden:

RECORD OF A SWEDISH COW-TESTING ASSOCIATION FOR TEN YEARS.

Year	Average milk yield per cow—Pounds	Average fat test—Per cent	Average butter yield per cow—Pounds	Average number of feed units per cow	100 feed units gave—	
					Milk—Pounds	Butter—Pounds
First year	6,890	3.11	236	2,586	266	9.1
Second year	6,582	3.11	225	2,458	268	9.1
Third year	7,357	3.16	256	2,501	294	10.2
Fourth year	7,692	3.17	268	2,418	319	11.1
Fifth year	7,653	3.04	256	2,281	336	11.2
Sixth year	8,268	3.04	277	2,443	338	11.3
Seventh year	9,155	3.05	307	2,603	352	11.8
Eighth year	9,338	3.15	324	2,648	353	12.3
Ninth year	9,183	3.15	319	2,585	355	12.3
Tenth year	10,064	3.12	345	2,751	366	12.6
Increase	3,174		109	165	100	3.5

This association had in the tenth year 639 cows. Giving the butter a value of 30 cents a pound and the feed units a cost of 2.6 cents a unit, these 639 cows returned during the tenth year $18,153.99 more than the same number would have returned during the first year, or nine times as much net profit. The cost of this splendid added income is less than $1 per cow, or less than $639 a year.

The cow-testing records in Denmark and Sweden show other instances where equally great improvements have been accomplished by profiting by the lessons the records teach. To duplicate the improvement shown in the foregoing table is indeed a worthy object for any cow-testing association.

THE COW TESTERS.

The cow testers (the men who collect the data and make the calculations) are young men who have been trained for this purpose. The agricultural schools have organized courses for the education of these men. One of the conditions for entrance to the schools is that the young men must have been raised on the farm and have had practical experience in the feeding and care of live stock. At the conclusion of this training, followed by one or two years' work in a cow-testing association, these men are greatly sought after for positions of trust and skill in connection with the dairy business. They can be found as managers and owners of dairies and operators of creameries, and so well recognized is the effect of this training that many creameries and dairies specify in their advertisements for men to fill these positions that the men must have had such training.

GENERAL RESULTS IN EUROPE.

Reports from Denmark show that the average production per cow in 1908 had increased to 224 pounds of butter. This average is exactly twice as much as it was in 1884. Much of this improvement has been accomplished as a result of the cow-testing movement. Reports from Sweden show an equal improvement. The more indirect results are seen in better system for all farm work, a livelier interest in the business of the farm, and a better understanding of the technical problems connected with its management. On the whole, the cow-testing associations have had a powerful influence in interesting the young people in farm life and keeping the population in the rural districts, and during the later years large farms are being cut up into smaller farms, in order that they may furnish homes for all the people desiring to engage in agricultural pursuits.

ASSOCIATIONS IN THE UNITED STATES.

OPPORTUNITY AND NEED.

According to the twelfth census the average production of butter-fat per cow in the United States in 1900 was 145 pounds, which compared with the average production of 224 pounds of butter per cow in Denmark is entirely too low. The Bureau of Statistics of the Department of Agriculture reports that on January 1, 1910, there were 21,801,000 milch cows in the United States, and if it were possible to inaugurate a system whereby the average production per cow might be increased even one pound of butterfat in a year, this increase would amount to 21,801,000 pounds, which at the price of 30 cents a pound would be worth $6,540,300. If such an increase could be brought about by better selection of cows and feeding stuffs, the sum mentioned could be figured practically as clear profit. Investigations by experiment stations and breeding associations show that there are a large number of cows which yield greatly in excess of this average, some reaching an amount as high as 800 or 900 pounds of butterfat in a year—one cow even 998 pounds. This being the case, there must be a large number of cows which yield less than 145 pounds of butterfat in a year.

Many reports of cow census investigations conducted by Hoard's Dairyman have been published during the last decade. These investigations have been made in representative sections of many dairy states, and show an average production but very little above that reported in the twelfth census. More than one-fourth of the herds reported failed to produce enough milk or butterfat to pay for their feed at market prices.

THE PRACTICAL DIFFICULTY.

The difficulty has been to devise a system whereby the unprofitable cows might be detected. It is a common belief among farmers that the man who does the milking knows the best cows in the herd, as well as the poorest; but numerous experiments have demonstrated clearly that this belief is not warranted. Many factors enter to lead the judgment astray. The cow which gives a generous flow of milk during the first few weeks of her period of lactation is usually regarded as the best cow. She may soon go down in her flow of milk, and perhaps goes dry for four or five months of the year, but this is not observed, and only the memory of the large flow she gave when fresh lingers in the mind of the owner.

Another cow may give only a fair flow of milk when she first comes in, and may not be regarded highly by her owner; but she may continue at the same rate of yield for a long period, and will in the end prove a great deal more valuable than the other cow. No milker can tell, without weighing the milk regularly, whether a cow gives 6,000 or 8,000 pounds of milk in a year; still the difference may prove the difference between profit and loss on that particular cow.

When the milk is valued according to its butterfat content unsupported estimates of the cow's performance are still more uncertain. It requires frequent testing to ascertain the average percentage of fat in the milk a cow yields; the test may vary greatly from milking to milking and from day to day. There may also be a great variation in the richness of the milk yielded by a cow when she is fresh as compared with a time later in the period of lactation.

And last, but not least, different cows show different feed requirements for the same production of milk or fat—a fact which is not generally thought of, and it is impossible for the feeder to estimate accurately the difference in cost of feeding the various cows for a year unless records of the feed are kept systematically.

An expression often heard among members of cow-testing associations during the first year is, "The cow I thought was my best cow is actually the poorest," which shows that impressions of the relative profitableness of the different cows in the herd, if formed without actual records, may be exactly contrary to the truth.

It is possible for the farmer, by weighing, to ascertain the amount of milk that each cow in the herd produces, and ever since the invention of the Babcock test he has had an easy means of knowing the fat content of the individual cow's milk. Very few farmers, however, have taken advantage of this opportunity; not because it would not pay them to do so, but largely because testing is tedious work, and requires care, regularity, and time to make it accurate. Many farmers have bought Babcock testers and have started in to do this work, but have given it up for the above reasons. It has the nature of an extra chore, and is apt to be neglected under the pressure of other work. To be successful, a system for obtaining these data must be independent of other work on the farm.

THE ELEMENTS OF ECONOMY.

In order to be able to decide intelligently which cows produce milk and butter economically and which do not, it is necessary to know three things about the individual cows in the herd. First, how much milk they give; and this must be known for a year, because a cow has to be fed for three hundred and sixty-five days. Second, how much butter fat there is in each cow's milk, for upon this depends the market value of the milk. And third, in order to form a correct idea as to the economical utilization of the feed, it is necessary to know the amount of feed consumed by the cow.

The cow's ability to convert feed into dairy products economically can not always be judged by net profit in dollars and cents, as this profit is dependent also upon the skill of the feeder and the sagacity with which he selects low-priced and at the same time suitable feeding stuffs. In other words, the same cow might yield very different results with different owners; therefore, in judging of net profits, the man as well as the cow should be considered. For this reason, cows in one herd should not be compared on this basis alone with cows in another herd, nor should the summaries of whole herds be thus compared. The product must be compared with the feed consumed in order to form an accurate opinion, and that cow is a good dairy cow which has the ability to convert a large amount of feed into a correspondingly large amount of valuable dairy products with the least waste. In the absence of any such system as the feed-unit system, whereby all feeds are brought to a common basis regardless of their cost, it is perhaps not practicable to express absolutely the exact degree of economy in the production of dairy products.

The dairyman usually fixes a certain quantity of butterfat as a minimum, and if a cow does not reach that production she is deemed undesirable and disposed of. The cow tester's duty is to study the individuality of each cow in the herd and teach the farmer to feed her so that she will reach her maximum production consistent with an economical utilization of the feed.

THE FIRST AMERICAN ASSOCIATION.

The cow-testing movement in the United States was inaugurated by the writer, working under the direction of the state dairy and food department of Michigan, and the first association was organized at Fremont, Mich., September 26, 1905, under the name of the Newaygo County Dairy Testing Association. The general purpose for which it was formed was "to promote the dairy interests of its members, and particularly to provide means and methods for testing the milk of the cows of the members periodically." It consisted of 31 members, and 239 cows completed the first year's test. The officers of the association consisted of a president, a vice-president, a secretary and treasurer, and a board of nine directors. This board had the management of the business of the association and employed a cow tester, who made monthly visits to each herd, and as there are only twenty-six working days in a month, it was necessary for him in some cases to test two herds in one day.

METHODS OF OPERATION.

The cow tester arrives at the farm in the afternoon and remains there for twenty-four hours, when he is carried by the farmer to the farm of the next member in the association.

On his arrival at the stable the cow tester enters in a book which he carries for this purpose the name and number of each cow in the herd, whether she gives milk or not. As it is the purpose of the work to ascertain the actual status of the whole herd, as well as of the individual, every cow in the stable should be entered on this list. It is obvious that if only cows with large yields were entered on the list, at the end of the year the herd would show a higher average than the truth would warrant. For this reason, and in hope of obtaining commercial advantages from such high records, some dairymen have preferred not to have the whole herd tested; but it is a rule of the cow-testing association to obtain records of every animal in the herd which has had one calf, and no records are published where such is not the case.

The cow tester takes part in the feeding of the cows, and while doing so he weighs the amount of roughage and grain each cow receives and records these data in a book which he carries with him at all times. The milk yielded by each cow is weighed and samples of it are obtained for testing. Records of the feed and the yield for each individual are again obtained and recorded the next morning, and after breakfast the fat determination is made. During the forenoon the calculations are made and entered in the record book, which at all times remains in the possession of the farmer.

The milking is done at the usual milking time, in order that the average yield may be obtained as accurately as possible. In case of competition between the herds, there may be a tendency to milk early in the morning on the day the tester is expected to arrive. In this way the yield for the testing day might be somewhat increased. To guard against this it is customary in some associations for the cow tester not to follow a regular route, so that it will be impossible for the dairyman to know the exact day on which to expect him.

In weighing the milk a "shotgun" can—a can 8 inches in diameter and 20 inches high—is used. It holds 35 pounds and has straight sides, with a handle near the bottom so that it may be easily emptied. The empty can should weigh even pounds so that mistakes in subtraction may be avoided. It has straight sides so that accurate samples may be obtained by the use of an instrument known as a "milk thief," as with an ordinary milk pail with a flaring top an accurate sample might not always be obtained, owing to the greater area of the milk at the surface than at the bottom. If the herd is large it is desirable to have two of these cans with straight sides so that the milker may pour the milk into them and proceed to milk the next cow without waiting for the tester to weight and sample the milk. In this way time is saved in the stable.

For weighing the milk a special spring balance is used, weighing to 30 pounds and having two indicators, one of which is adjustable and should be set at zero when the weigh can is on the scales. The balance is graduated in tenths of pounds and is frequently tested so that any stretching of the spring may be immediately detected. The milk is poured from pail to pail two or three times and the sample for testing is taken immediately after such pouring is completed.

The fat determinations are invariably made at the farm. The reason for this is the difficulty in transporting the samples to the creamery without leakage, churning of the milk in hot weather, etc., any of which renders correct determination difficult. Another and equally important reason is that the dairyman becomes more interested in the work if it is done on the farm. He usually assists the expert with the testing and in this way acquires an understanding of the principles and the use of the Babcock test which he would not otherwise get.

If a cow is in heat or temporarily out of condition on the testing day, no sample of her milk is taken, as there is usually an abnormal fluctuation in the fat content at such times, and the calculations based upon tests taken then may be several pounds too high or too low. The fact of such temporary abnormal condition is recorded in the herd book, and the average of the preceding and the following months' test is used in the calculations.

Milk from fresh cows for the first three days can not be considered normal, and calculations based upon a test at that time may be very erroneous. It is the rule not to use the test of a cow's milk for calculations until she has attained a normal condition. If she has not reached this condition on testing day the following month's test is used as a basis for calculation the yield for the first three days is omitted from the record, and the cow is considered as being dry when nearing the end of the lactation period.

The day upon which the test is made is called the testing day, and the records obtained on that day are used as a unit for each day in the period extending equal lengths of time on both sides of the testing day. This period is called the testing period, and is so marked off as to end exactly in the middle of the time between two testing days. Observance of this rule is very important, as it materially affects the accuracy of the work. The number of days in the testing period is understood to include both the dates mentioned as beginning and end of the period; thus, if the testing period begins March 15 and ends April 14, there will be thirty-one days in the testing period. The yields of milk and butterfat for the testing period are founds by multiplying the yield on the testing day by the number of days in the period. The daily yield of milk is recorded in tenths and the monthly yield in whole pounds, while the yield of butterfat is recorded in tenths of a pound. If 12 tests are made in the year, 12 testing periods will result, and the sum of the records thus obtained will furnish a total summary of the various items for one year.

It is always advisable that the dairyman should make daily weighings of each cow's milk. By doing this he will discover at once any sudden fluctuation in the milk yield, and may in many cases be able to locate and remedy the cause. He should also note when each cow goes dry, when she is bred, the date of calving, and any changes in feed during the testing period, so that he may be able to give the cow tester this information when he arrives.

A MICHIGAN ASSOCIATION'S RECORD FOR THE FIRST FOUR YEARS.

The Newaygo County Dairy Testing Association, the first cow-testing association organized in the United States, has now been in operation for more than four years, and four whole years' records have been obtained. At the end of the first year a number of members withdrew from the association, but new members were readily found, and the association is now able to get more members than it can take care of. The summaries for the first four years of the association's existence are given in the following table:

YEARLY AVERAGES PER COW OF NEWAYGO COUNTY (MICH.) DAIRY TESTING ASSOCIATION.

Year	Number of cows	Milk—Lbs.	Fat test—Per ct.	Total butterfat —Lbs.	Value of fat per pound—Cents	Total value of fat—Dolls.	Cost of roughage—Dolls	Cost of grain—Dolls.	Total cost of feed—Dolls	Profit—Dolls.	Returns for $1 expended in feed—Dolls	Feed cost of one pound butterfat—Cents	Feed cost of 100 pounds milk—Cents
1906 --	239	5,336	4.04	215.0	23.3	50.27	20.92	8.36	29.28	20.99	1.72	13.6	55
1907 --	287	5,467	4.02	219.7	29.1	63.85	24.88	11.54	36.42	27.43	1.75	16.6	67
1908 --	254	6,007	4.21	252.8	27.3	68.99	25.60	14.07	39.66	29.33	1.74	15.7	66
1909 --	272	6,170	4.28	264.5	31.2	82.43	27.04	14.95	41.99	40.44	1.96	15.9	68

The following table gives the yearly averages of nine herds which were in the association from the beginning.

YEARLY AVERAGES PER COW OF NINE HERDS FOR FOUR YEARS.

Year	Number of cows	Milk—Lbs.	Fat test—Per ct.	Total butterfat —Pounds	Value of fat per pound—Cents	Total value of fat—Dolls	Cost of roughage—Dolls	Cost of grain—Dolls	Total cost of feed—Dolls	Profit—Dolls	Peturns for $1 expended in feed—Dolls	Feed cost of one pound butterfat—Cents	Feed cost of 100 pounds milk—Cents
1906 ---	70	5,802	4.01	232.7	23.5	54.66	21.52	11.71	33.23	21.43	1.64	14.3	57.2
1907 ---	85	5,987	4.03	241.4	29.4	71.02	25.59	13.70	39.29	31.73	1.81	16.3	65.6
1908 ---	86	6,011	4.29	258.2	27.4	70.70	24.97	15.64	40.61	30.09	1.74	15.7	67.6
1909 ---	89	6,426	4.32	277.6	31.2	86.52	27.26	16.44	43.70	42.82	1.98	15.7	68.0

These tables show a continuous increase in the average production. The richness of the milk has also increased. The average profit per cow has been doubled. Some of this increase in profit is partly accounted for by the increase in the price of butterfat, although feed prices show an almost corresponding increase. In these calculations it has been assumed that the value of the calf, skim milk, and manure from each cow would offset the cost of stabling labor, and caring for her.

METHOD OF ORGANIZING.

The usual way of organizing an association has been to ascertain the extent of the interest in dairying in a community, and to call a meeting and explain the merits of the cow-testing association as an institution. If enough interest is exhibited to warrant going on with the work, a temporary organization is effected, and the neighborhood is thoroughly canvassed during the following few days in search of additional members for the association. When enough have been secured a second meeting is called, at which the organization is perfected, officers elected, and by-laws adopted.

In order to support a cow-testing association it is necessary that there should be 26 herds, conveniently located, and a sufficient number of cows so that the tester can get a reasonably good salary. As it is each member's duty to furnish the tester's conveyance to his next place of work, it is necessary that the farms of the members be located near enough together so he can be conveyed without inconvenience. A distance of 2 miles is not too great to give satisfaction, and the conveyance is often furnished by some passer-by. If the cow-tester keeps his own horse and buggy, as is the case in some associations, a larger territory is usually accommodated. In such cases the members must furnish feed and stabling for his horse. The charge to the farmer is usually $1 a year for each cow. This money constitutes the pay of the tester; and it is desirable that there should be not less than 400 cows in an association, in which case the tester gets $400 a year. In addition he gets his board and lodging free of charge at the farm where he is working. There being only twenty-six working days in a month, it is not possible to have more than twenty-six members, except in cases where two men with small herds live very close together so that it is possible to test both herds in one day. On such farms the regular milking time is fixed so that the tester can attend to the weighing and testing in the first herd and still have time to get to the second herd by the regular milking hour. In addition to the $1 a cow, the farmer pays a membership fee of 25 cents yearly. This money, which for twenty-six members amounts to $6.50, is used for paying incidental expenses, postage, cost of sulphuric acid, etc.

THE TESTING OUTFIT.

A testing outfit consists of a 12-bottle Babcock tester with glassware, two "shotgun" cans in which to weigh the milk, a spring balance, a "milk thief," and the necessary books and record blanks. The outfit, with the Babcock tester, is usually furnished by the state authorities, but in case it must be purchased by the association assessments have to be levied for this purpose unless the number of cows is great enough so that it can be paid for out of the fund collected at the rate of $1 a cow. The necessary books and blanks have in some cases been provided by the United States Department of Agriculture until such time as the states have appropriations from which to supply these. The states of Michigan, Wisconsin, Vermont, Ohio, Iowa and Maine now have provision for supplying this material to associations within their own borders.

QUALIFICATIONS OF THE TESTER.

The cow tester has much to do with the successful working of an association. He should be well fitted temperamentally and should have had special training for the work. Punctuality, regularity, and accuracy are of great importance, for unless he has these qualities the records may not be a true indication of the value of the respective cows. The tester should also have the ability to advise and teach the farmers, and for this reason it is necessary that he be constituted temperamentally to give advice in such a manner that it will be accepted and followed.

The work of a cow-testing association depends largely for its success upon the capability, reliability, and conscientiousness of the tester; but, on the other hand, the result of this work depends also upon the members. They should be willing to profit by the lessons which the cow testing teaches and ready to put into effect such changes in feeding, stabling, and operation of the dairy as the records show will be profitable.

In this country, as well as in Europe, the position of cow tester offers excellent opportunities for dairy students to gain practical experience and is the best kind of school to fit them for responsible positions in connection with dairy work.

ACCURACY OF RESULTS OBTAINED BY VARIOUS TESTING METHODS.

Through the kindness of Prof. T. L. Haecker, access was had to the records kept of the production of the herd at the Minnesota State Experiment Station, St. Paul, Minn., where weights and Babcock tests of every milking of each cow in the herd have been recorded for nearly twenty years. The accuracy of the method used by the cow-testing associations was determined by comparing the yields as estimated by them and outlined in this publication with the actual yields as determined by weighing and testing each milking.

The accuracy was also determined of the estimated yearly yields as calculated by each of the following methods: (1) Taking the weights and a test of the composite sample of eight milkings in the middle of each month; (2) taking the same for four milkings in the middle of each month; (3) taking the product of one day in the middle of each three-week period; (4) taking the product of one day in the middle of each two-week period. In each of these methods the yields for each period were estimated and the sum of the periods was taken as the total for the year.

The following table shows the variations from the actual yields obtained by each of these five methods, the percentages of difference above or below the actual yields being shown in each case. The maximum variation by the cow-testing association method was not over 5.1 per cent for any one year, and this method compares favorably for accuracy with any of the others. The table shows the maximum per cent of variation for any one year and the per cent of total difference from the actual yield for nine years for each of the methods.

VARIATIONS FROM ACTUAL YIELD OF ESTIMATED YIELD OF MILK AND BUTTERFAT AS DETERMINED BY VARIOUS METHODS.

	Milk					Butterfat				
	Cow testing association method	Eight milkings; composite	Four milkings; composite	One day in three weeks	One day in two weeks (five years)	Cow testing association method	Eight milkings; composite	Four milkings; composite	One day in three weeks	One day in two weeks (five years)
Cow 1:	per ct	per ct	per ct	per ct	per ct	per ct	per ct	per ct	per ct	per ct
Maximum variation	—3.3	—2.5	+3.1	—2.7	—1.6	+2.8	+3.2	+3.6	—4.6	—1.9
Total difference	— .9	— .6	— .8	— .5	— .6	+ .3	— .8	— .7	— .8	—1.2
Cow 2:										
Maximum variation	+2.1	—2.3	—2.3	—2.9	—1.7	+2.9	+3.5	+3.9	+5.6	—3.1
Total difference	— .8	— .9	— .8	—1.0	— .8	— .8	.0	+ .6	+ .3	—1.8
Cow 3:										
Maximum variation	—4.9	—3.2	—3.8	—2.3	—2.7	+2.9	—3.8	—3.9	+5.7	—3.9
Total difference	— .8	— .9	— .8	— .3	—1.5	—1.1	—1.4	— .6	— .4	—2.7
Cow 4:										
Maximum variation	+2.6	—1.9	—2.6	—2.6	—3.3	—4.2	—4.3	—5.3	+4.4	—4.8
Total difference	— .1	— .4	— .5	— .5	—1.9	— .2	— .5	— .7	+ .7	—2.7
Cow 5:										
Maximum variation	—3.7	— .9	—2.8	—3.8	—5.2	—5.1	+2.9	+4.4	—3.2	—3.0
Total difference	—1.2	— .3	—1.0	—1.3	—1.6	.0	— .4	—1.1	— .4	—1.2
Cow 6:										
Maximum variation	—3.9	—3.3	—3.8	—4.5	—1.8	—4.8	+3.5	—3.9	+4.3	—1.6
Total difference	—1.7	— .9	—1.1	.0	— .3	— .3	— .6	— .5	+1.2	— .4
Cow 7:										
Maximum variation	—4.3	—4.0	—4.5	—3.8	—2.0	—4.5	—3.3	—6.1	—5.1	—2.7
Total difference	—2.0	—1.2	—1.8	— .6	—1.3	—1.7	— .9	—1.3	— .7	—1.5

In the method used by the cow-testing associations the total difference for a nine-year period is in no case over 2 per cent from the actual yield. When we consider that the cow-testing association method means the weighing and testing of the milk just one day a month, and that the results are as close to the actual as above stated, we must conclude that the records of performance as found by the cow-testing association method are sufficiently accurate to enable the dairyman to weed out his unprofitable cows.

MEETINGS.

The associations hold monthly meetings for the discussion of topics of interest to dairymen. A programme committee selects from the members one or two to lead in the discussion, and occasionally outside speakers are invited. The meetings are usually held at the homes of the members and often take the form of a picnic. On such occasions there is free discussion and many valuable ideas are exchanged. After lunch a tour is made of the farm, and the crops as well as live stock and buildings are inspected.

GROWTH IN THE UNITED STATES.

The following table shows the growth of the movement in the United States:

NUMBER OF COW-TESTING ASSOCIATIONS IN THE UNITED STATES, 1905 TO 1910.

States.	Number of associations in operation					
	1905	1906	1907	1908	1909	1910 (5 mos)
Michigan	1	2	4	3	5	6
Maine				3	5	6
Wisconsin				3	10	12
Vermont				3	5	9
California					2	3
Iowa					2	3
Pennsylvania					1	2
Ohio					1	3
Washington					1	1
Colorado						1
Connecticut						1
Nebraska						1
New Hampshire						1
Oregon						1
New York						1
Maryland						1
Total in United States	1	2	4	12	32	52

RESULTS.

Perhaps the most important result of the cow-testing associations is the increased interest which members take in their work. Farm work, consisting as it does in large part of manual labor, is apt to become monotonous unless there is an intelligent interest in the operations and unless the farmer has something special in view. The monthly visit of the cow tester stimulates this interest; and while the primary object for which the association was organized is the selection and rejection of individual animals, the results, direct and indirect, cover a very broad field.

The tester, being an expert dairyman, not only studies the individual animals in the herd as to their capacity for utilizing feed economically, but he also assists the farmer in selecting those feeds which contain the greatest amount of food nutrients at the lowest price, thereby creating a larger net return per cow, per acre, per dollar's worth of feed, and, last but not least, per man. This larger net return per cow is brought about not only by the increased yield of the cows, but by improved economy in the conversion of feed into finished product.

One of the direct results is improved breeding. Many testing associations have proved to be forerunners of breeding associations, or bull associations, for the development of purebred cattle of breeds particularly adapted to the local conditions.

The cow-testing movement, being an organized effort for improvement, is conducive to better community spirit. At the monthly meetings problems of interest to dairymen are discussed, and this discussion often stiumlates a friendly rivalry for attainment of the best results. The systematic and cooperative effort creates an interest in the growing of better forage crops and in better feeding; in more sanitary stabling and better care of the milk; it opens the eyes of the farmers to the value of system in their work, and leads to the application of better business methods.

Co-operative buying of feeding stuffs is a feature in nearly all cow-testing associations. At the monthly meetings the members place in the hands of the board of directors an order for the amount of feed stuffs they wish to buy. The aggregate of these orders often amounts to several carloads, and by buying in carload lots and for cash, lower prices and freight rates are obtained. The officers of the associations study the markets for feed stuffs and are often able to take advantage of a low market. In this way business judgment is stimulated and the individual member is enabled to reap the benefit of the business judgment of his more experienced co-workers.

The work, broad as it is, has value not only for the farmer, but also for the creamery and the cheese factory, since it encourages better dairy methods at the same time that it procures larger remuneration for the dairymen. One of the causes of dissatisfaction with creameries and cheese factories has been the low average production of dairy commodities. The farmer has not had any systematic performance record of the production of his individual cows, and it is natural for him to think that someone else besides himself is responsible for the low return, and the creamery or cheese-factory manager, being the one who purchases his milk or cream, has received the blame. Many farmers have had only a half-hearted interest in dairying, because the average production of their herds has been so low that they could make but a small profit therefrom. The experience already gained in places where associations have been organized shows that with the elimination of the poor cows in the herd comes an interest in better cows and better care of the cows, and a tendency to make greater discrimination in price between good and poor animals. The introduction of better cows on the farms creates a desire for more of them, and a larger number of cows renders it possible for creameries and cheese factories to collect more milk or cream in a given territory, thus reducing the cost of collection.

The increased interest in dairying stimulates interest in dairy and kindred associations and creates an interest in purebred stock. In the Newaygo County Dairy Testing Association, where during the first year only one man owned a purebred dairy bull, 22 such bulls were found among the herds during the second year; and while no purebred cows at all were owned in the first year, 21 were bought during the second year. This interest has steadily increased, and during the third year a breeding association was organized. Such increased interest in purebred stock naturally affects the market for such stock, and entitles the movement to the hearty support of the breeders' associations of the different dairy breeds.

The consumer is interested not only in greater economy in the production of dairy commodities, but in improvement of their quality, which is promoted by sanitary stabling and better care of milk on the farm. These results follow from cow-testing associations wherever tried, and the consumer should for this reason give encouragement to such organizations.

RELATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE TO THE WORK.

The United States Department of Agriculture, through the Dairy Division of the Bureau of Animal Industry, has been largely instrumental in encouraging the inauguration of cow-testing associations in the various dairy states, and has always worked in cooperation with the state authorities. In many states no funds have been available for conducting the work, and the department has furnished the services of an organizer and has supplied blanks and record books free of charge, in the hope that when the value of the work has been demonstrated the states would appropriate sufficient funds to carry it on.

Such appropriations should cover the expenses of organizing, such as salary and traveling expenses of an organizer; they should also provide for the printing of books and blanks for compilation of the records, and for publication of the same.

It is advisable that some state authority should supervise the work, and that occasional visits should be made to the associations, so that difficulties may be straightened out should they arise. It is also desirable that the supervisor of the work should attend the meetings held by the associations and give advice to the tester and check up his work, in order to get the highest degree of accuracy. Many of the states have already provided for such supervision, and for furnishing the material as well as for compiling the records, and it has been the policy of this department to encourage the assumption of state control of the work.

In the promotion of this movement the dairy division has sought to forestall some of the defects under which the work in the older countries suffered during its earlier years. By furnishing the blank forms for the first few associations in each state, the aim has been to establish uniformity of methods, and by studying the work in the various states and keeping in close touch with it, to be able at all times to suggest to those interested the latest improvements in the system.

CONTRACT USED IN THE ORGANIZATION OF A COW-TESTING ASSOCIATION.

Whereas the ——— Dairy Testing Association has been organized for the principal purpose of providing means for the cooperation of its members in testing the milk of their cows periodically and for otherwise improving their dairy interests; and whereas it is proposed by said association to engage a suitable person as soon as enough subscriptions are obtained to warrant said association in engaging such person, we, the undersigned members of said association, each for himself and not one for the other, agree to pay the sum of ——— for each cow set opposite our respective names to said association for that purpose. Said fees to be paid in quarterly installments in advance, the first payment to be made as soon as such person is engaged by said association. Each one of us also agrees to furnish board and lodging for said person for at least one day each month, and convey him to his next place of work. Said person shall not work Sundays, but shall have board and lodging over Sunday at the place where he is working Saturday.

CONSTITUTION AND BY-LAWS FOR A COW-TESTING ASSOCIATION.

ARTICLES OF ASSOCIATION.

We, the undersigned, desiring to become incorporated under the provisions of act No——— (of the public acts of ———), entitled ———, and the acts amendatory thereof and supplementary thereto, do hereby make, execute, and adopt the following articles of association, to-wit:

ARTICLE I. The name by which this association shall be known in law is ——— Dairy Testing Association.

ARTICLE II. The purpose for which it is formed is generally to promote the dairy interests of its members, and particularly to provide means and methods for improvement of the dairy qualities of cows and for the testing of the cows of its members periodically.

ARTICLE III. Its principal office and place of business shall be at ———.

ARTICLE IV. The number of its directors shall be ———.

ARTICLE V. The names of the directors for the first year of its existence are as follows: ———, ———.

ARTICLE VI. Any person may become a member of this association and be entitled to its benefits and privileges upon being accepted by the board of directors and upon complying with the requirements of the by-laws.

BY-LAWS.

ARTICLE I. *Meetings*—An annual meeting of this association shall be held at a place to be designated by the board of directors, in ———, on the —— day of ——— in each year, at 2 o'clock p. m., for the purpose of electing a board of directors, and for the transaction of such other business as may lawfully come before said meeting.

The president shall call one meeting each month for the purpose of discussing topics of interest to dairymen and shall at each meeting appoint a committee of three members who shall prepare a programme for the next meeting. No member shall be obliged to serve two months in succession on this committee.

Special meetings may be called by the board of directors or by the president, and notice thereof shall be given by the secretary, by mailing to each member a written or printed notice thereof at least five days prior to such meeting. Such notice shall state the object of the meeting, and no other business shall be transacted thereat.

ARTICLE II. *Board of directors*—Section 1. The board of directors shall be elected at the annual meeting, the first election to be held on the ——— day of ———, A. D. ——.

Sec. 2. The board of directors shall have the management and control of the business of the association, and shall employ such agents as they may deem advisable, and fix the rates of compensation of all agents and employees.

Sec. 3. Whenever any vacancies occur in the board of directors by death, resignation, or otherwise, the same shall be filled without undue delay by the majority vote of the remaining members of the board. The person so chosen shall hold office until the next annual meeting or until his successor is elected and qualified.

Sec. 4. The board of directors shall meet on the first ——— of each month, at such hours and in such places as they may by resolution determine.

Sec. 5. A majority of the board of directors shall constitute a quoroum at all meetings of the board.

ARTICLE III. *Officers*—Section 1. The officers of the association shall consist of president, vice-president, secretary, and treasurer. The offices of secretary and treasurer may be held by the same person. The officers shall be elected by the board of directors from their own number by a majority vote of the whole number of directors. The first election shall be held immediately after the election of the board. Subsequent elections shall be held annually on the day of the regular meeting of the board next ensuing after the annual election, the day to be fixed by resolution of the board of directors.

Sec. 2. In case of death, resignation, or removal of any officer, the board shall elect his successor, who shall hold office for the unexpired term.

ARTICLE IV. *Membership*—Any person acceptable to the board of directors may become a member upon paying a membership fee of 25 cents.

ARTICLE V. *Dues*—Each member shall pay a fee of 25 cents annually on or before the ——— day of ———; and in addition thereto shall pay quarterly dues to cover his share of the expense of cow testing, in proportion of the number of cows he has to be tested, the amount of such quarterly dues to be fixed by the board of directors, and paid as specified in a contract to be made for this purpose between the members.

No member shall be allowed to participate in the election of the board of directors who shall not have paid his annual dues in advance.

ARTICLE VI. *Amendments*—These by-laws may be amended or added to by a majority vote of all the members present at the annual meeting or at a special meeting called for the purpose.

VALUE OF THE FARMERS' INSTITUTE.

READ BEFORE POWESHIEK FARMERS' INSTITUTE—MRS. LAURA MC KEE, DEEP RIVER, IOWA.

If the farmer cannot go to school, the next best thing to do is to take the school to the farmer, and that is what the extension department of our State Agricultural College, as well as the colleges of other states, are doing today, in the great work they are doing in extending and broadening the scope of the work of the colleges, and extending invaluable aid to the farmer and his sons in better preparing themselves to meet and successfully solve the problems that are being forced to the front by the changed and constantly changing conditions that are demanding new methods. Farming as conducted a few years ago will not answer today, and present day conditions are what the agricultural colleges are helping the farmer to solve, and these farmers' institutes, held in different counties in the state, afford a splendid medium through which the farmer and his family can be put in touch with the latest thought and the last word, up to date, on subjects that should be, and are, of vital importance.

The colleges are holding meetings, and sending out their best men—men who have made a special study of the branch of farm work they handle—to carry the great lesson to the man or boy who has not the means, or time, to avail himself of the advantages of personal attendance at the college, and instead of the few in attendance at this meeting the house should be crowded to the last seat.

These missionaries who come out from our state college have a message of practical farming, and they deliver it in such an interesting way that it has a literary as well as a practical value, and if they are intelligently and thoughtfully listened to, they will impart more real knowledge than a thousand bulletins, which, too often, are only casually glanced over and thrown aside.

This work is growing more popular each year, not only in Iowa, but in the other great agricultural states of the Mississippi Valley region. The value of the farmers' institute held here each fall, and its auxiliary spring meeting, is of great value to those who avail themselves of the opportunity to attend and participate in its various departments. It has stimulated interest in better grains, better seed, better stock, better poultry and better farm methods, all of which are apparent at each succeeding fall meeting. All who are identified with farm work, either as hired hands or owners, should make an extra effort to attend all these meetings and should get in touch with the State College and avail themselves of the bulletins as issued, and study their contents carefully. The farmer of the future is not going to be contented with the methods of his forebears, and I just sound a note of warning here to the young man who contemplates agriculture as his life work, if you neglect these great opportunities and fail to study these plain lessons, you will not be tolerated among the ranks of the coming farmer, no more than will the botch carpenter, blacksmith, mason, or other skilled workman be tolerated among those who have fitted themselves to be leaders and teachers among their kind. We live in a progressive age, and the farmer who does not understand crop rotation, who does not understand the selecting and raising of better seed, who does not understand the method of feeding and breeding better stock, will not be able to compete with his more progressive neighbor.

Illinois is forging to the front along the lines of improved methods, and if we go to sleep she will outstrip us in the race. The agricultural college, of that state is sending out special trolley cars under the supervision of the professors in the extension department. This train will have the cooperation of the county superintendents, and the superintendent of the county through which the train is traveling will be one of the party of instructors. At the different points visited talks and demonstrations will be given, and each subject handled will be in the hands of an expert in that particular line. He will be provided with samples and equipment to illustrate the real thing, which will add to the importance of the lectures. This train is being operated for the benefit of the children of the rural schools.

Now, if we cannot have a train, with speakers from our agricultural college, visit the rural schools of our county, why can we not have community clubs—Granges, if you please—where we can meet for social functions. Our annual fall meeting should be broadened in its social aspects, and I urge upon the women of this community the importance of allying themselves with the work, especially along the lines of domestic science, civic beauty, cookery, and other departments of work. There is a great work for the mothers in this farmers' institute movement. Too many young girls are growing up who have too much nonsense in their heads and too little practical, hard, common sense to become the mothers and teachers of the coming generations, and it is time steps were taken to interest them in other subjects. We should organize for effective work along every line that offers an opportunity for an uplift, and I believe there is no more effective way to accomplish great work than to organize community clubs, auxiliary to this institute, and spend as much time as possible in studying methods by which we can make the fall meeting one of the most notable and helpful events in the year. We need to interest the young folks in this work, and nothing will be more potent for good than a social organization where the young folks can assemble at frequent intervals and enjoy a real "play spell." You will be surprised how much fun they will get out of it, and how much good they will do you. Once you get the young folks thoroughly interested, you will be again surprised at the real talent you have in your neighborhood that is laying dormant because there has been nothing to arouse it to action. Again, you will not only be surprised but you will be amazed at the number of older persons, men and women, who will flock to these meetings to hear what the children have to say. Once started, they will grow to be powerful adjuncts to our institute, and when we get the youngsters interested the older people will be coming early to avoid the crowd and push for seats at our spring meetings. Then the sidewalks will not be lined with half-aroused farmers basking in the sun, who imagine they know all there is to know about the business they are engaged in.

THE GRANGE—ITS ADVANTAGES, SOCIAL AND EDUCATIONAL.

BEFORE MAHASKA COUNTY FARMERS' INSTITUTE—BY MRS. I. N. TAYLOR. OSKALOOSA, IOWA.

I thought it would be well for us to notice the origin of the Grange. The order of Patrons of Husbandry originated in the mind of O. H. Kelley, a man of New England birth. In 1864 he was appointed a clerk in the Department of Agriculture at Washington. Two years later Mr. Kelley was commissioned by Honorable Isaac Newton, Commissioner of Agriculture, to visit the southern states for the purpose of obtaining statistical and other information in regard to the south and report the same to the department at Washington. It was while traveling in the south that a thought of a secret society of agriculturists for the protection, and advancement of their interests, and as an element to restore kindly feeling among the people, occurred to him. At that time you remember there was bitter feeling among the people at the close of the war.

The idea of giving women full membership in the proposed order originated with Miss Carrie A. Hall, a niece of Mr. Kelley's, to whom he had imparted his views of the new association after his return from the south. It is neither ambition nor pride that has placed women on an equality with her co-worker, but a blessing which was received from the human race.

But, you say, we don't believe in secret organizations. All well organized families have secrets. I don't suppose there is one here. If I should ask you to tell me your family secrets, you would reply, "Oh! that is for the protection and interest of my family." Just so with our Order. The Grange is an organization for the whole family and is based on a ritual of four degrees, four for men and four for women, which is unsurpassed in the English language for originality of thought, purity of sentiment and beauty of diction. A constitution was formed to govern the Order in 1867. The first dispensation for a Grange was granted in 1868. Nearly 30,000 charters have been granted. We have over a million members and the organization is fast increasing in membership. It seems that the Grange came to the farmer's rescue. An organization for the farmer's protection seemed an absolute necessity. No influence has done more to advance social and intellectual enjoyment of the farmer than the Grange. A prominent minister said recently one of the happiest winters he ever spent in his life was when he with his family attended the Grange.

Its educational influence cannot be estimated. Agriculture is a high and noble calling. God commanded us to till the soil. Today the farmer, his wife, and sons and daughters, stand in the foremost rank, socially and educationally. We owe a large portion to the Grange. It has done more than all other agencies combined to develop a higher manhood and womanhood among the agricultural people, to elevate our calling and place us in position to secure the rights which we are justly entitled to under the Constitution of this government. The work is not to tear down, but build up. We all know what the Agricultural College has done for the farmer. We cannot estimate what the rotation of crops alone has done. We cannot all attend the Agricultural Colleges, but they can come to us, and through the Grange we can have a short course the year round, literary programs, corn judging, domestic science contests, etc. Here we have the only organization that affords the farmer these opportunities, meeting together once a month, exchanging our *burdens*, and cares, our griefs and our joys. All these would prove very beneficial both socially and educationally.

The common opinion of the former Grange was that it was a faliure. True, they made some mistakes, but, when we stop to consider what the Grange has done for the farmer, we will have to acknowledge its success has been remarkable. We are indebted to the Grange for the Agricultural Colleges, which are a boon to every farmer. We should put our shoulder to the wheel, making it a grand success.

Rural Free Delivery. The Grange sent a committee to Washington and they worked year after year to get an appropriation to establish some rural mail routes for an experiment. They finally got tired of them and then the government took it down in the muddiest part of Illinois, the worst roads they could find, thinking that would kill it and silence the people. But, to their surprise, it met with such success, regardless of these difficulties, the committee went back the next year, asked for forty thousand. It was granted, and proved to be still more successful. They had the courage the next year to ask for three hundred thousand dollars. Then the fight began. The late Mr. Mark Hanna was chairman of the committee on appropriation and denied the National Master even a hearing. He at once telegraphed for the rest of the committee and they rushed to Washington. Mr. Hanna still refused them a hearing. Mr. Jones (one of the committee) went before the committee as a whole and asked for a hearing and made a speech in regard to the matter. In conclusion he said, "Now, gentlemen, if you care anything for the farmers of the United States, grant us this request, or we will send men here that will look after the interests of the farmer." The outgrowth of this was our present R. F. D. Who here doesn't think this one act alone is not worth all the time and money spent in the Grange? Is it not enough to give us new enthusiasm to work for the Grange if we haven't already done so?

This is only one of the many good things accomplished. for the farmer reduced the price on sewing machines, farm machinery, etc. The present Grange is more modern than the former one, and if entered into with the right spirit will be a great agency in directing the social instinct of the community, developing a literature atmosphere, stimulating a love for country home and country people. The farmers have it within their power, if they will pull together and trust each other, to control and direct the nation. "In unity there is strength."

In 1908, President Roosevelt, learning that there was so much dissatisfaction among the farmers, appointed a committee to investigate and see what the reason was for so many wanting to leave the farm and move to town. The President summarized the conclusion that the three greatest needs of the farmers were: 1st, Organization among the farmers to put them on a level with the organized interests with which they had to do business; 2nd, That agriculture be taught in the country schools. Teach the children as much out-door as in-door, perhaps more, so they will prepare for a country life. 3d, Better means of communication, including good roads, and parcels post, which the country is everywhere, and rightly, demanding. Only the other day I read a report of a conference held by ministers of seven states to confer over the welfare of the country people. Sixty-two men registered and about half as many women. They recommended organization. They chose a prominent minister to deliver an address. One of his theories (and he had tried it) is that every country neighborhood needs a building to be used as a real social center for the community. He believes the country boys and girls do not play enough, do not know how. They will stand around and listen to stories and talks of older persons when they would better be frolicking in some wholesome game.

Veering problems of labor and life disturb our minds in country as in city. The great need of the present is organization. We need leaders, socially and educationally, in the country, as well as leaders in better farming. We need earnest men and women, interested in learning better ways to the Waters of Life. May we not instill into the young hearts that will take the place that will soon know us no more, that all rights which we enjoy have duties which they must perform. To them shall be given those finer qualities which shall be to those who come after them what the finer natures of those who have gone before us have been to us.

We resolve to labor for the good of our Order, our country and mankind, striving to develop a higher manhood and womanhood among ourselves. We want to meet together, talk together, eat together, sing together, arouse our better nature, imploring the continued assistance of our Divine Master to guide us in our work.

PTOMAINE POISONING.

MRS. ALBERT RINDEN, OSKALOOSA, IOWA.

The woman who presides over a household should consider as one of her most important duties the handling and storing of foods. In the buying, storing and handling of food it is most important that we realize the causes of what is called the "spoiling" of food. This knowledge is comparatively recent.

Countless numbers of tiny living things called micro-organisms, a word meaning simply "small living things," are everywhere found, which will grow in the food man has prepared for his own use and cause it to spoil. Indeed, the kind of food required by man and animal seems to be that which is also best suited to these microscopic plants.

These microscopic plants flourish in the kitchen, storeroom, ice-box, milk room and cellar.

If the conditions are favorable they reproduce themselves with incredible rapidity, one bacterium in the course of a day producing a million more minute plants like itself. The bulk of these minute forms of life are harmless, at least under usual conditions some are useful, like those which ripen milk and; many are harmful, since they cause waste or maybe, what is much more serious, a direct cause of disease.

Molds, yeasts, and bacteria may be found in the cleanest room, but they exist in far greater numbers in dirty quarters, where, for instance, crumbs of food have been allowed to decay and dust to accumulate.

Not only do the micro-organisms appropriate our food, with the result that the food sours, rots, or putrefies, but they sometimes, in addition, leave behind disagreeable consequences, like the musty and moldy odor and flavor of some spoiled foods, or the substances called ptomaines, which are poisonous.

The housekeeper's success in preserving food from becoming impaired depends very largely on her ability to reduce the number of these unbidden guests to the lowest possible limit.

The science of bacteriology has given us a new meaning for the scrubbing, airing, and sunning that for many generations good housekeepers have successfully practiced; it shows us that the storing and handling of foods are bacteriological questions, and on that account some knowledge of the nature of these microscopic plants is essential.

It is said that the numbers of bacteria are in direct relation to the density of population.

We cannot get away from them without going into the highest mountain or to the polar regions; but we can protect our food supply from their undue growth by reversing all the conditions that they require for their development. It is of primary importance that bacteria be prevented from getting their start.

The flesh of healthy living animals is free from them, but when slaughtered and marketed the surface is almost certain to acquire bacteria, like all things which are exposed to the air and dust.

They are inside the human body, often performing important uses, as in intestinal digestion.

Bacteria require at least 25 per cent of moisture in which to live and multiply, and they prefer darkness to light, and while as a class they grow best at a comparatively high temperature, 80 deg. to 95 deg. F., most of them are killed by an exposure to 150-160 deg. F. of moist heat.

A repeated application of boiling temperature is necessary, however, to kill the spores which certain kinds produce.

These tiny organisms cannot live in heavy sugar solution, a fact made use of in preserving. Vinegar, spices, salt and wood smoke have a like effect. Sunshine, too, is destructive to them. Food kept at the freezing point is an excellent preventive, and is as important for many cooked foods, as for raw.

Many bacteria produce poisons in their growth just as higher plants do. Bacteria are plants.

Saprophytea are bacteria that grow on dead animal matter; they produce ptomaines.

Parasites are bacteria that grow on live animals, they produce toxines, which cause disease as typhoid, diphtheria, tuberculosis, etc.

Ptomaines are lifeless, and non-productive, and are secretions of bacteria that cause decomposition. When ptomaines manifest themselves in animal food it is usually in canned meats, fish or shell fish or in sea food that has been too long in cold storage without proper care.

Canned foods are safe enough, so far as ptomaines go, if they are put up wholesomely. Indeed, there is more reason to believe that more poisoning of this kind results from food that has been carelessly handled in cold storage.

All tainted meat or fish, whenever its odor is detected, should be thrown out as probably dangerous.

Ptomaine poisoning from ice cream is familiar to us through frequent paragraphs in the newspapers. The trouble in this case is traced to a lack of cleanliness, either in the cow sheds, the dairy, the handling of the milk, or in the making or packing of the cream. At any stage of the process the use of containers that have not been cleaned by much scalding and washing may lead to a score of violent cases of ptomaine poisoning. Cheese is one of the sources of this same peril. There is no harm in fresh, pure cheese, but if kept too long the same piece may become a scourge. Some prefer cheese that has "aged" to a tainted condition, but it is to be remembered that all putrefaction in animal foods to which cheese belongs—tends to the formation of ptomaines. Mussels, oysters, lobsters, and all shell fish are commonly suspected as carriers of ptomaine poisons.

These substances may form in such fish as have begun to putrefy, but more commonly derive the ptomaines from feeding where sewage is emptied.

When there is any suspicion that a case of ptomaine poisoning exists no time should be lost in waiting to see if the sufferer "gets better". Send for a physician at once. Ptomaine poisoning from meat develops generally in five or six hours after eating. The attack comes on with nausea, vomiting, colic and diarrhoe. There are thirst, headache, often vertigo and stiffening, with a feeling of utter collapse. If ice cream causes poisoning, the symptoms are likely to appear an hour or two after eating, there is a violent irritation all along the intestinal tract, together with the same symptoms as in meat poisoning. In conclusion let me emphasize the fact that ptomaines are a product of the bacteria that grow on dead animal matter, it cannot be destroyed or rendered ineffective by boiling.

And that bacteria in general are agents for good rather than ill, without them plant and animal life would be impossible on the face of the earth.

FARMERS' INSTITUTES FOR YOUNG PEOPLE.

U. S. DEPARTMENT OF AGRICULTURE.

INTRODUCTION.

Out of every 500 young people in the country districts in the United States only one ever enters an agricultural college. Of every 100 rural and urban children only five ever reach the high school and only six ever go beyond the elementary schools. Ninety-four out of every 100 children therefore finish their education with the district school. Inasmuch as these 94 children include those in cities and towns as well as those of the country districts, and since city and town children continue longer in school than do those of the country, it is safe to say that fully 97 out of every 100 rural boys and girls finish their education with the district school.

In order to reach the 499 out of every 500 rural boys and girls who can not go to an agricultural college, and yet in whom some attachment for and interest in rural life should be inculcated, there has developed quite generally a demand for the introduction into the rural schools of subjects that will educate in the direction of appreciation of rural life and its opportunities instead of confining the teaching as hitherto to studies that ignore the country and direct the scholar's attention to the occupations of the towns and cities.

AGRICULTURE IN THE RURAL SCHOOLS.

The first effort to meet this demand was made by the town and city schools through the introduction of topics which later were all embraced under the term "nature study." After the value and practicability of this new feature in education had been demonstrated by the towns and cities, rural school authorities became interested and a few of the more progressive introduced it into their course of studies.

The rural school began its work of agricultural instruction by directing the scholars' attention to some of the simplest and most common natural objects in the neighborhood of the school itself. Gradually this was extended to critical observation of various phenomena in the growth and development of plants and animals. Later, elementary text-books on these and other subjects connected with rural life were introduced and studied.

Among the country schools, however, only the most favorably situated have been able to conduct even elementary work along this line. There are several reasons for this. The subject is new in school work with children, and the majority of public school teachers are not prepared to give instruction in agriculture because until recently there was no demand for such instruction and consequently no provision had been made either for qualifying a teaching force for imparting it or for equipping the schools with suitable apparatus. There is also the further difficulty that the teacher of the single room school, even though capable in this new line of study, has not the time necessary in which to give the instruction unless vacation and holiday periods are utilized for the purpose, and the vast majority of rural school districts are not financially able to support an additional teacher. The consolidated rural school, however, promises to overcome some of the chief difficulties that have hitherto hindered the development of this work, and is now opening the way for the introduction of the teaching of agricultural subjects into the country schools.

THE PURPOSE OF THE MOVEMENT.

The purpose in this movement by the elementary schools, so far as it has definite aim, is to awaken in boys and girls an interest in farming and domestic operations by bringing them to see and appreciate the beauty, independence, and general desirability of rural life. By the proper study of these subjects mental culture can also be secured as effectively as by the exclusive use of the so-called disciplinary studies, while at the same time a broader view and better apprecitaion of life is imparted to the pupil.

BOYS' AND GIRLS' CLUBS.

As a part of the course in education for children of public school age, a system of "clubs" has been organized in many sections by rural teachers and county superintendents of schools, intended to interest the pupils in country life and at the same time be of service in preparing them for them for their future work, whether that work be on a farm or in some other occupation or profession. The club is usually composed, both as to membership and officers in immediate charge of the work, of children in the public schools. The organization, however, is subject to general oversight by the teacher in charge of the school. The club activities are mainly in the form of contests in judging grains and animals, with some field work, such as growing corn, potatoes, or similar crops. The field operations are restricted to quite small areas, and to comparatively few varieties of products. The fact that the work for the most part is confined to young people who are in the rural schools, practically limits it to children under 14 or 15 years of age, and the agricultural teaching during this period, whether in class or through the agricultural clubs, is of necessity restricted to such instruction as the young woman in charge of the school can find time to give outside of her many other duties as teacher of the regular and specified studies that the curriculum requires.

If, as statistics show, the education of the country child with few exceptions ceases with the rural school, it follows that the great body of young people of the country are left without special training that will give them *practical* acquaintance with the business operations of a farm.

FARMERS' INSTITUTES FOR YOUNG PEOPLE.

In order, therefore, that opportunity to become acquainted with agricultural operations may be given to those who have left the public school and from whose ranks the future farmers and their wives must be supplied, the farmers' institutes in several states have organized and are now conducting what are known as "institutes for young people." The majority of these, however, are not as yet institutes in the sense in which the work of the farmers' institute has come to be defined. They are in reality boys' and girls' clubs conducted in the same manner as those organized and operated by the public schools.

That the institutes should have taken up the work for young people along lines similar to those of the schools is not surprising when it is considered that the movement has just begun and the best methods of dealing with it have not been clearly outlined or thoroughly developed. The great need among young people beyond the school age for agricultural instruction was so urgent that it could not be longer delayed, consequently the institute undertook to do what it could to supply that need without waiting to make thorough previous study of the conditions or of the methods best adapted to improving these conditions. It simply started, and then following the lines of least resistance, which have been the methods that were pursued by the schools, it has gone on until now a radical departure from these methods is seen to be necessary and is proposed.

Because of the fundamental difficulty in securing teachers capable of giving vocational instruction in agriculture in the rural schools, and from the fact that after the scholars leave school no provision has been made for giving them opportunity to receive such instruction, the farmers' institute has undertaken the training in agriculture of rural children after leaving school. In doing this it has found it necessary to drop from its system of instruction the purely educational feature and devote itself strictly to giving vocational instruction. Such studies and practice, therefore, as the institute utilizes, have in view the perfecting of the individual in his vocation. The institute system, therefore, partakes more nearly than any other of the trade-school method, and is intended for youth above 14 years of age. It differs from the work carried on by other agencies employed in training country youth in that its primary object is to build up a better agriculture by teaching young people methods for increasing crops, improving animals, restoring worn-out soils, and disposing in a profitable way the products of farms. It is undertaking to teach youth *how to make money in agriculture.* It is endeavoring to do this by giving them information respecting the raising of crops, the breeding and care of animals, and by bringing them to appreciate the value of organization and cooperation in securing enlarged political and commercial advantages as well as better social and intellectual privileges and by teaching them how to secure and use these advantages. By undertaking this work the farmers' institute will occupy a field separate and distinct from all others, and one which is not now covered by any other organization. It will become the connecting link between the agricultural club movement by the schools on the one hand and the regular farmers' institute for adults on the other.

METHOD OF INSTRUCTION.

The method best adapted to giving vocational information is still to a great extent unknown, and can only be discovered through the careful study of rural conditions and of the characteristics of rural youth and of their relation to country life. That an effective method ought to be had is now evident to all. When it will be had will depend upon the seriousness with which the whole matter of the vocational training of country youth is regarded by those who are in position to provide it.

The fact that there can be no physical compulsion exerted in bringing those who are to be reached to attend upon any course of teaching makes it necessary to employ other methods for securing their attendance and attention. There are at least two characteristics in the rural youth that can be depended upon to respond to proper appeal—ambition and love of gain. With respect to the first, young people are naturally interested in a subject or exercise when presented in the form of a contest. Their plays for the most part are of this nature. When properly planned and conducted such exercises not only interest young people, but they possess in addition features of great practical and educational value. They stimulate the creative faculties of the contestants, teach the relation between cause and effect, develop power and desire to do things, show how to apply previous knowledge derived from books or school to solving the problems of life, and by keeping the mind occupied with useful purposes they stimulate to further and more determined effort.

The contest method, therefore, has wisely been adopted by the institute for awakening interest and creating enthusiasm among young people in agricultural operations. In this direction lie great possibilities. To fully realize these possibilities and benefit by them the institute should study to dscover additional subjects suitable for competitions, and of value in the improvement of rural affairs. The number of such subjects in use at present is extremely limited, being confined, in crops, almost wholly to corn; in animal husbandry; to stock judging; and in domestic science, to the preparation of a few of the simpler articles of food. Exercises of this nature should be extended to other lines of rural activity, and be utilized by the institute for instructing in a much wider range of agricultural operations.

SUBJECTS FOR INSTITUTE STUDY.

The subjects that can be successfully studied in institutes for young people cover a wide range and may ultimately include the entire field of rural life. Since the institute is dealing with boys and girls who for the most part are without much experience, and while the subjects studied must be treated in a way to be intelligible to them, yet it by no means follows that because the pupils are not of full age the teaching and the truths taught must be correspondingly elementary. On the contrary, since the several subjects to be treated are almost wholly economic, involving difficult problems in farm practice and administration, it is of extreme importance that only the very best teachers that the institute authorities can secure shall be provided, in order that the instruction may be of the most reliable and useful character that science and experience can recommend.

It is not possible to give a complete list of the agricultural and home-making studies that may profitably be undertaken by institutes for young people, much less to attempt to teach them all. Such a list would include every known object bearing directly or indirectly on rural life.

While the farm presents problems most complex and difficult to be thoroughly understood, on the other hand many of its operations are apparently so simple that they seem to require no particular thought or skill for their performance, and consequently come to be regarded as of minor importance.

Many of the manual processes are of this character. They are largely matters of practice, or operations repeated until a degree of dexterity is acquired in their performance. The general lack, however, of both knowledge and skill on the part of many of those who engage in these every-day operations is very marked when their performance by an ordinary worker is compared with the rapidity and perfection of their execution by an accomplished expert.

With a view to improvement in this direction the institute for young people should offer prizes for superior skill and proficiency in manual processes, and should hold competitive exhibitions at which dexterity and skill would be recognized and rewarded. The most common manual practices in need of general improvement are the operations of milking, grooming horses, wood chopping, fence building, corn husking, ditching, draining, grain shocking, hay and grain mowing and stacking, fruit gathering, fruit grading, fruit packing, whitewashing, spraying, pruning, plowing, horseshoeing, sheep shearing, setting up machinery, cotton chopping, cotton picking, cooking, baking, canning, preserving, dressmaking, house decorating, papering, millinery, and similar everyday matters, all requiring skill, the exercise of good judgment, and discrimination for their proper performance, while some demand a highly cultivated æsthetic taste.

In order to increase interest and at the same time to instruct young people, the gathering of collections provides a valuable means and should be encouraged. Specimens of rocks, soils, grasses, grains, weeds and weed seeds, vegetables, flowers, fruits, insects, etc., furnish material for such collections.

The list of contests also could be extended to the preparation of papers and the holding of oral examinations upon subjects requiring wider culture, knowledge, and experience than those just mentioned. Such a list might embrace farm management, orchard management, landscape gardening, vegetable gardening, flower gardening, practical housekeeping, the preparation of balanced rations, also papers upon local history, on the local fauna and flora, local geology and geography, local laws, local markets, sanitation, etc.

Premiums could be offered for reports on experiments or demonstrations conducted on seed selection and improvement; school garden work, labor-saving conveniences, and also to individuals for the best school record for the year; for a review of some bulletin or agricultural book; for the most money made by the pupil's own exertions; for the best exhibit of agricultural products; for the best crop of not less than an acre of corn, wheat, rye, oats, potatoes, or vegetables grown by himself; for a complete diary of a year's operations on a farm; for the best kept set of books of account; for stock judging and other forms of judging, etc.

The county or state fair also might offer premiums for the successful competitor in subjects that bear on the general improvement of agriculture in the region, especially such as relate to plant and animal breeding, cattle feeding, dairying, bee keeping, sheep raising, poultry rearing, egg production, fruit growing, etc.

In addition to the subjects discussed in the meetings, the institutes for young people should outline courses for home reading, taking up definite groups of subjects or lines of work, and should assist the readers in obtaining bulletins and other publications from their state experiment stations and the United States Department of Agriculture. The institutes might also include a brief systematic course in the generally neglected but most important subjects of farm bookkeeping, local laws, local history, farm management, etc., and they might discuss the advantages and operations of cooperative associations organized for the purpose of buying and selling and for securing the more economical transportation and distribution of farm products.

DIRECTIONS FOR CONTESTS.

In contest work a necessary preliminary is a carefully prepared plan, giving full directions for carrying out the various operations which the contest embraces, the method of judging, and the nature of the awards. These plans and directions should be prepared by competent experts, and the various points to be observed should be stated fully and clearly, so as to be unmistakable and readily understood by the average young person of 14 years of age. The plans, specifications, and forms of score cards used in judging should be printed in leaflet form and be distributed as widely as possible among the young people of the community whom the institute is endeavoring to reach. Each leaflet should deal with a separate subject and be a complete outline of the method of treatment to be followed.

SYSTEMATIC COURSE IN CONTEST WORK.

The contest feature of the young people's institute should be graded so as to be as far as possible a complete and progressive course. When completed a certificate should be given stating the work performed by the contestant during the period in which he was a member of the institute.

The course should begin with a simple exercise like the growing of some common crop and end with the more difficult, as a daily record for twelve months of the operations of a farm, with comments on these operations, and a set of books showing the loss or gain of the enterprise for the year.

The series of courses should embrace cereal crops, staple crops, forage crops, root crops, garden vegetables, greenhouse and hothouse management, marketing products, etc., requiring for graduation the completion of the course. By thus systematizing the instruction experience would be had along all lines of farm operations. A similar course should be prepared for contest work in domestic science and household art.

By the method of pursuing a systematic course for four or five years the practical work of the young people's institute would be preparatory to their undertaking the larger operations of a farm or home, and instead of the contest exercises being disconnected and incomplete, as now, they would be systematized into a course that would cover the principal operations of a farm and be of real service in the future life of the contestant.

PRIZES.

It has been found by experience that young people are greatly attracted and influenced by rewards, and that they value these rewards far above their worth in cash. A trip to the state fair, the present of a well-bred calf, a trio of chickens, a magazine subscription, a set of books, a medal or certificate of proficiency, all have been tested and found to be a strong incentive to enter competitions and carry them out to the end. Expenses of a short course at the college of agriculture or of a summer outing at a young people's encampment are some of the more expensive as well as the most beneficial prizes that have been offered.

Money for prizes can usually be secured without difficulty by applying to public-spirited citizens in the community for contributions, many of whom are glad of the opportunity to assist worthy young people in any effort that they may make to better their condition and become more useful citizens of the State.

BOYS' ENCAMPMENT.

In a few States the farmers' institute and the college of agriculture, by conducting what are called boys' encampments, have interested in agricultural subjects many boys who would not join the ordinary club contest. The camping-out idea appeals to them as a pleasant and enjoyable diversion, and the lectures, demonstrations, and judging contests which form a part of their daily life for the week or two during which the camp is held are pursued with pleasure as well as profit. Their interest is aroused by the scientific features of subjects which they have never before understood and which are here exhibited in their relation to the practical. Many boys who otherwise would never have been reached are thus started in search of further useful information. These boys' encampments are, strictly speaking, young people's institutes. The members live and study together during the entire meeting; prizes are awarded for winners in stock, grain, and similar judging contests, and for proficiency in other agricultural subjects as determined by a final examination of the work pursued at the encampment.

FORM OF ORGANIZATION.

As but few institutes of the character proposed for young people have heretofore been held, no single plan of organization has been put into practice to serve for present or future guidance, nor is it likely that any one plan ever will be followed by all the states. Each state has its own special form of farmers' institute, differing from those of other states in order to adapt it to its own particular needs. Institutes for young people will no doubt, therefore, usually be adapted to those organized for adults, with such modifications as are necessary to fit them for the new form of work.

For a while at least institutes for boys and girls should be union meetings, with special sessions for each sex as occasion may require. The memberhip should be restricted to persons over 14 years of age and should not as a rule include those over 18 or 19 years. Whether there shall be a single institute for a county or one for every township or school district can be determined as the work develops and the needs of the young people seem to demand.

While attendance upon the institutes is of necessity voluntary, yet it is important to effect, as early as practicable, an organization in each locality composed of a membership that can be depended upon to attend the meetings and to assist in carrying on the work. To accomplish this it will be necessary to secure pledges from as many as possible to a form of constitution that embodies these obligations. In order to assist those who have not yet undertaken the organization of such institutes a form of constitution is given which is intended to be suggestive and to be modified to suit the varying conditions of the several states.

Interest in institutes for young people should not be limited to farmers. The support of business, professional, and public-spirited men generally is necessary to make the movement a success, and this support is more likely to be given if the institutes are planned to include town as well as country boys and girls. Merchants, lawyers, doctors, mechanics, and tradesmen should be invited to assist.

CONTROL OF THE INSTITUTE.

Institutes for young people should be under the direction of the farmers' institute authorities. Where "county" farmers' institute organizations exist the immediate control should be vested in them. Where there are no such organizations the control should be directly under the "state" farmers' institute, which in some instances is a separate organization and in others is a branch of the state department of agriculture, the college of agriculture, or the experiment station.

The time and place of meeting, the outlining of programmes, the selecting of speakers, and all other arrangements for the young people's institutes should be under the direction of the regular farmers' institute, and the expenses should be paid by that organization. The institute for young people will thus become a branch of the regular farmers' institute, organized and conducted entirely by it. It will not only be a true farmers' institute of a grade advanced beyond the boys and girls' club, but it will also be instructed by expert teachers and have distinct courses of study prepared for giving instruction along vocational lines.

SEASON FOR MEETING.

In organizing for the work that the young people's institute is to undertake provision should be made for holding at least three meetings during the year—one in the early spring, another in midsummer, and a third in the late autumn. The first or spring meeting should be for instruction along lines that are to be put into practice and followed during the summer. The autumn meeting should be devoted more especially to a discussion of the results obtained from putting the information received at the spring meeting into practice, and for judging contests and the awarding of prizes. The mid-summer meeting might in addition be made a field meeting or an encampment at which the exercises would mostly be in connection with observation of growing crops and the examination of farms, orchards, herds, and flocks in the neighborhood where the institute or encampment is held.

The instruction should be by lectures and demonstrations, given by competent institute speakers, much in the same manner as is now practiced in dealing with adults, and special effort should be made to induce free discussion of the various points that the speakers present.

INSTITUTE LIBRARY.

Every young people's institute organization should be provided with a library of reference consisting, along with books of general reading, of bulletins, pamphlets, and other books by recognized authorities upon agriculture and domestic science. This library should be in charge of the county institute and be available for use by all young pepole belonging to the institute organization of that county. When special publications are needed for any purpose the secretary of the institute should endeavor to secure them by gift, purchase, or loan. He should also furnish the young people of the institute organization with lists of books relating to agriculture, domestic science subjects, and rural affairs.

FARM CLUBS FOR BOYS AND GIRLS UNDER INSTITUTE CONTROL.

While farm clubs for children under 14 years of age can best be organized and conducted by the public schools, there are some states where the schools have not yet undertaken this work and others in which, although it has been begun, there still are districts where clubs have not yet been organized.

In such states and in such districts the farmers' institute can materially assist in inaugurating the movement for the introduction of agriculture into the public schools by giving information to teachers, county superintendents, and parents respecting this kind of work, and may go to the extent of organizing and conducting clubs as samples of what the schools should do in this direction.

As soon as the institute has organized such a club and has succeeded in interesting a group of children of school age and their teachers in contest work, it should turn it over to the school authorities for further attention and control. The school being on the ground and having to do with the child's education for the greater portion of several years, is in position to take charge of the club and guide its operations far better than any other organization. Children, therefore, of school age (10 to 14 years), should be committed to the school authorities for agricultural club work during the period of their connection with the school. After leaving school, the farmers' institute for young people can take charge and give them the special vocational training that they need to become proficient in the practical operations of the farm.

The form of organization to be adopted by the institute directors for these clubs is primarily that of the club as organized by the public school, and since the work is assumed only temporarily or until the school is ready to take it off the hands of the institute people it should possess the characteristics of the club as organized for school purposes.

THE OPPORTUNITIES.

Hitherto the farmers' institute has devoted its energies almost exclusively to interesting adults in agriculture and household art. It has selected its subjects for discussion and chosen its instruction with this in view. A new field of activity has suddenly opened up, one that is altogether unoccupied and for which no adequate provision has yet been made —the vocational training in agriculture of country youth between 14 and 18 or 19 years of age.

After 14 the public school does not and, as at present constituted, can not reach the majority of rural youth with agricultural instruction. What the secondary schools may ultimately accomplish in this direction has not yet been revealed. In the mean time these youths are growing up, many of them with no proper appreciation of country life or of its advantages and opportunities in a business way over those of the towns and cities. The farmers' institute can change all this by modifying its present methods to suit the ages, needs, and degrees of advancement of these youth. It should avail itself of the opportunity now presented and occupy this field. By doing so it will not only be following out the purpose of its organization, but will also perform valuable service in the present effort for the development of agricultural education and become an important factor in shaping the future of the world-wide movement for agricultural extension now under way.

CONSTITUTION FOR COUNTY FARMERS' INSTITUTE FOR YOUNG PEOPLE.

ARTICLE I.—NAME.

SECTION 1. The name of this organization shall be the————Farmers' Institute for Young People.

ARTICLE II.—OBJECTS.

SECTION 1. The object of this institute shall be to assist and encourage useful education among young people respecting life on the farm and in the home; to develop the agricultural resources of the county by means of farmers' institutes especially adapted to young people between the ages of 14 and 18; to cooperate with the county and state farmers' institute organizations; to teach, by lectures, demonstrations, and other means, better methods in general farming, stock raising, dairying, fruit culture, and other branches of agricultural industry, including domestic science and home economics; to interest young people in country life; and in general to promote the moral, intellectual, social, and material welfare of the community.

ARTICLE III.—MEMBERSHIP.

SECTION 1. Any resident of the county between the ages of 14 and 18 may become a member of this institute by signing the constitution and meeting the conditions of the by-laws.

ARTICLE IV.—OFFICERS.

SECTION 1. The officers of the institute shall consist of a president and a secretary-treasurer, who shall also be members of the state or county farmers' institute and shall be appointed by and represent these organizations.

ARTICLE V. DUTIES OF OFFICERS.

SECTION 1. It shall be the duty of the president to preside at all meetings of the institute and to have general supervision over its work in the district.

SEC. 2. It shall be the duty of the secretary-treasurer to keep a record of each institute, to keep a roll of the members and the postoffice address of each, and to conduct all correspondence relating to the business of the institute. At the close of the institute he shall make out a detailed statement of its expenses and send it to the local representative of the farmers' institute of the county, and at the close of the year he shall make out a similar report giving also the time, place, and duration of each institute, the number of sessions held, the attendance at each session, and the total attendance, and shall transmit this report to the director of the state farmers' institute. It shall also be the duty of the secretary-treasurer to act as librarian and to assist in obtaining bulletins and other agricultural literature for the members. It shall further be the duty of the secretary-treasurer to personally or through a committee arrange for securing a hall in which to meet, prepare the local programme, and attend to such other matters as may be necessary to the success of the institute.

ARTICLE VI.—DUTIES OF MEMBERS.

SECTION 1. It shall be the duty of the members to attend every session of each institute during the institute year, and to perform the duties assigned.

ARTICLE VII.—BY-LAWS.

The institute may enact such by-laws, not in conflict with its constitution, as may be necessary.

ARTICLE VIII.—AMENDMENTS.

This constitution may be altered, amended, or repealed by a vote of two-thirds of the members present at any regular annual meeting after due published notice for two weeks prior to the meeting in at least two of the papers of the county, if so many there are.

COURSE IN CONTEST AND PRACTICE WORK.

The following is suggested as a course in contest and practice work in a farmers' institute for young people (boys), extending over a period of five years.

FIRST YEAR.

(*a*) Corn growing.
(*b*) Wheat, oats, barley, and cotton selection.
(*c*) Feeding, milking, and caring for not less than two dairy cows.
(*d*) Flower gardening.
(*e*) Berry growing.
(*f*) Feeding and caring for not less than ten chickens.

SECOND YEAR.

(*a*) Planting and cultivating cereal crops and cotton with selected seed.
(*b*) Feeding and caring for not less than two beef cattle.
(*c*) Experiments in the application of fertilizers to corn.
(*d*) Experiments in the effects of cultivation of the soil.
(*e*) Fence building and hedge trimming.

THIRD YEAR.

(*a*) The planting, caring for, and handling of grass and forage crops.
(*b*) Feeding and caring for not less than two swine and two sheep.
(*c*) Feeding and caring for not less than ten ducks and ten turkeys.
(*d*) Practical work in draining and irrigation.
(*e*) Farm bookkeeping.
(*f*) Farm architecture.

FOURTH YEAR.

(*a*) Planting and caring for root, cucurbitaceous, fiber, and tobacco crops.
(*b*) Stock judging.
(*c*) Fruit culture.
(*d*) Vegetable gardening.
(*e*) Laying out farms.
(*f*) Work with machinery and power motors.

FIFTH YEAR.

(*a*) Studies in local and state history.
(*b*) Studies in local law.
(c) The marketing of produce.
(*d*) Studies in sanitation.
(e) Studies in rural school improvement.
(*f*) Agricultural exhibitions and fairs.

FORM OF CONSTITUTION FOR BOYS' (GIRLS') CLUB.

[Used in Indiana.]

ARTICLE I.—NAME.

The name shall be the Boys' (Girls')———Club of———Township, ———County, ———.

ARTICLE II.—OBJECTS.

The objects shall be: (1) To gain knowledge of the best methods of agriculture (to gain knowledge of household economics); (2) to prepare for the annual contest conducted by the farmers' institute organization; (3) to secure literary culture; and (4) to acquire a working knowledge of parliamentary usage.

ARTICLE III.—MEMBERS.

Any boy (girl) between the ages of 8 and 14, living within the county, may become a member by signing the constitution and paying the annual dues.

ARTICLE IV.—OFFICERS.

SECTION 1. The officers shall be a president, vice-president, recording secretary, corresponding secretary, treasurer, critic, and doorkeeper.

SEC. 2. The officers shall be elected by ballot at the last (annual) meeting of the club each year. They shall take office the first meeting of the ensuing year and continue until their successors are duly elected.

ARTICLE V.—DUTIES OF OFFICERS.

SECTION 1. The duties of the president, vice-president, secretary, and treasurer shall be those which usually appertain to these offices.

SEC. 2. The president shall appoint members to fill any vacancies that may occur by resignation or removal. The critic shall call attention to mistakes in language, gesture, and general bearing of those who take part in the formal proceedings of the club; look up and report upon disputed points as to grammer, choice of words, pronunciation, and parliamentary usage. The doorkeeper shall see that the place of meeting is kept comfortable, tidy, and properly ventilated, and look after the comfort of the members and any invited guests.

SEC. 3. The president, vice-president, and recording secretary shall be the executive and also the programme committee of the club.

ARTICLE VI.—DUTIES OF MEMBERS.

It shall be the duty of the members to attend each meeting of the club, abide by its constitution and by-laws, and perform every part assigned by the president or by the programme committee. Absence or nonperformance of duty, due to sickness or other unavoidable cause, shall be excused.

ARTICLE VII.—DUES.[a]

SECTION 1. The annual dues, payable at the opening of each year, shall be: For members under 12 years old, 10 cents 12 and under 15, 15 cents; 15 and under 18 years, 20 cents; 18 years and over, 25 cents.

SEC. 2. Three months' arrearage in dues will forfeit membership, but the member in arrears may be reinstated by a majority vote of the members present at any regular meeting, and payment of dues.

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[a] The dues may be uniform if preferred.

ARTICLE VIII.—MEETINGS.

SECTION 1. The club shall meet on the ——— (first, second, third, or fourth) Saturday in ——— (Name the several months in which the meetings will be held), at ——— (Name of the club headquarters).

SEC. 2. The hour of meeting shall be fixed by the programme committee.

SEC. 3. The date or place of meeting may be changed temporarily by vote of the majority of the members present.

SEC. 4. A special meeting may be called at any time by the president upon written request of five members.

ARTICLE IX.—ORDER OF BUSINESS.

(1) Call to order.
(2) Roll call.
(3) Reading minutes of previous meeting.
(4) Reports of officers (for annual meeting only).
(5) Reports of committees.
(6) Miscellaneous business.
(7) Appointment of committees.
(8) Special order of the day.
(9) Adjournment.

ARTICLE X.—BY-LAWS.

The club may enact such by-laws, not in conflict with this constitution, as may seem necessary.

ARTICLE XI.—PARLIAMENTARY GUIDE.

Robert's Rules of Order.

ARTICLE XII.—AMENDMENTS.

This constitution may be amended at any regular meeting by a two thirds vote of the members present, provided notice of the amendment was presented in writing at the previous regular meeting.

ORDER OF TOPICS FOR BOYS' INSTITUTE (CORN).

The following, suggested by the Indiana farmers' institute, will illustrate a good order of special topics to be pursued at a season's course of meetings.

First meeting—The selection of seed corn from the standing crop—when, how, and why. Members will bring desirable and undesirable types of stalk and ear for study and comparison.

Second meeting—Points of excellence in corn—study of the score card. Members will bring various types of ears for illustration, and shell certain ears to get the percentage of corn and cob.

Third meeting—How to use the score card—an exercise in scoring ten ears of corn by each member.

Fourth meeting—Comparison of home varieties of corn with the standard ear (as approved by the corn growers' association for the neighborhood in case such an association exists, otherwise by the state corn growers' association) as to length, circumferenre, proportion of corn and cob, color of grain and cob, regularity in rows, and uniformity in size and shape of kernels, filling out of ends, etc.

Fifth meeting—Testing and grading seed corn. Members will exhibit or demonstrate methods used. A second exercise by each member in scoring corn.

Sixth meeting—Preparation of soil, planting and culture of corn to secure perfect stand and greatest yield.

CORN CONTEST REQUIREMENTS.

[Used in Indiana.]

1. All contestants shall be between 10 and 20 years of age.
2. Each contestant shall agree to make a special study of scoring, selecting, planting, cultivating, and harvesting corn.
3. Each contestant shall grow a plat of corn each year. (Size of plat to be determined by club.)
4. Each contestant shall plant, cultivate, and gather his or her own corn.

5. Each contestant shall keep, according to an outline adopted by the club, a record of the details concerning the plat, work done, and number of bushels harvested. (See record card.)

6. Each contestant shall write an essay of not over 400 words on corn growing.

7. Each contestant shall select a sample of ten ears of corn grown on his or her own plat and exhibit them at the annual corn show of the club.

8. Each member shall take an active part in the meetings of the club when requested, and shall do everything that will make the club a success.

9. No contestant shall obtain through purchase or otherwise any corn for exhibition other than that grown on his or her own plat.

RECORD CARD (CORN).

The following record should be carefully kept and filled out by each contestant in compliance with the fifth requirement under the by-laws of the club:

1. Contestant's name ....
    P. O. address...................., Rural route...............
2. Variety of corn planted.......................................
3. Source of seed..
4. Method of handling seed from time of gathering the previous fall to planting time ....
5. Vitality of seed:
    How tested ....
    Percentage of germination..................................
6. Plat:
    Length in feet.................... Width in feet..............
    Area in square feet............ Kind of soil................
    Kind of subsoil................
7. History of plat:
    Crops grown there for three years previous to time of planting....
8. Fertilizers applied during three years previous to time of planting:
    Kind........................ Amount....................
    Kind........................ Amount....................
    Kind........................ Amount....................
9. Fertilizers used this year:
    Kind........................ Amount....................
10. Preparation of seed bed:
    Date of plowing..
    Cultivation ....

Implements	Time used.
....	....
....	....
....	....
....	....

11. Date of planting..
12. Name of planter used...
13. Distance between the rows....................................
14. Distance between stalks in rows if drilled...................
15. Number of kernels per hill planted...........................
16. Cultivation:

No.	Date	Depth	Reason
1	....	....	....
2	....	....	....
3	....	....	....
4	....	....	....

17. Kind of cultivator used......................................

HARVEST TIME.

18. Number of stalks in plat:
    Barren ....
    Smutted ....
    Suckered ....
    Two-eared ....
19 Stand of corn in plat:
    Average number of stalks per hill............................
20. Date the corn matures:
    Roasting ear...
    Dented or glazed...
    Ripe ....
21. Height of corn (measure 10 average plants and take the average):
    ....feet...........inches.
22. Total number of leaves on 10 plants, each taken from different hills...............................
23. Yield:
    Bushels on plat....................
    Bushels per acre...................
24. Cost of corn producing:
    Value labor of boys at 12 cents per hour...................
    Value team and boy at 25 cents per hour....................
    Cost of plowing................hours at.............per hour
    Cost of preparing seed bed... ..hours at.............per hour
    Cost of manure or fertilizer.................................
    Cost of seed...
    Cost of planting...............hours at.............per hour
    Cost of cultivation:
        Harrowing ....hours at.............per hour
            1st cultivation ....hours at.............per hour
            2d cultivation ....hours at.............per hour
            3d cultivation ....hours at.............per hour
            4th cultivation ....hours at.............per hour
        Hoeing ....hours at.............per hour
        Other cultivation ....hours at.............per hour

Cost of husking corn.........hours at..............per hour
Cost of harvesting fodder....hours at..............per hour
Rental value of land for corn..............................
Total cost............ .
Yield of plat................bushels.
Cost of producing one bushel of corn......................
Cost of producing one acre of corn........................

SCORE CARD FOR SEED-CORN EARS.

(Used in Minnesota.)

Points noted	Standard score	Sample No...... score	Sample No...... score	Sample No...... score	Sample No...... score	Sample No...... score
1 Market condition	10					
2. Form of ear	15					
3. Size of ear	5					
4. Uniformity and variety of characters	10					
5. Tips of ears	10					
6. Butts of ears	10					
7. Kernel:						
Uniformity	5					
Shape	5					
8. Color:						
Grain	10					
Cob	5					
9. Space between rows and kernels at cob	3					
	2					
10. Per cent grain to ear	10					
Total points	100					

STANDARD POINTS FOR CORN.

There are a number of varieties of corn. Each of these varieties has a certain set of characters that are different from the characters of other varieties. Therefore there must be a set of standard points for each variety. For example: The form of the ear of flint corn is different from the form of the ear of dent corn. These different characters are recognized by a corn judge as quickly as a cattle judge sees the difference between a Jersey and a Holstein.

RULES AND EXPLANATIONS OF POINTS.

Each entry or exhibit shall consist of 10 selected ears.

MARKET CONDITION.

The ears should be thoroughly mature, dry, and sound, and should feel firm when taken in the hand. The kernels must not be injured by mice or worms or by mold; neither should they show any rotten or cracked places. They should have a good, bright appearance and have a large germ.

Rule—If the ears have any of these faults, they should not be given the full 10 points, but be scored according to the extent of the defects, For example: If the defects such as cracked kernels, mold and decay or rottenness, amount to about as much as one whole ear and the rest of the corn on the ears is good, the mark should be 9. If it amounts to more than one whole ear and not enough for two ears, mark the exhibit 8½ or 8¾ upon market conditions, etc.

FORM OR SHAPE OF EAR.

The best formed ears are nearly the same size at the tip as at the butt. The rows of kernels should run straight from butt to tip. Twisted rows show bad form. The ears can be as long or big around as they can be found, but the length and the circumference must be proportional —that is, an ear must not be too big for its length. The tips and butts of the ears should be blunt and well filled with kernels.

Rule—There is no definite rule for judging the shape of the ear. Always have a perfect-shaped ear in mind and mark the sample according to how near the 10 ears come to being perfect. Make due allowance for variety characters.

SIZE OF EAR.

The size of the ear depends upon the standard for the variety being judged. For example: Minnesota No. 13 should be 8 inches long and 6 inches in circumference. No smaller dimensions will be accepted.

Rule.—Measure the length of each ear. If an ear is less than standard, put down the amount it is less than the standard. When all 10 ears are measured, add the amounts that are lacking. Then take one point off the standard for each 2 inches thus obtained. For example: The standard is 8 inches —

Ear No. 1 is 7.5 inches long, therefore 0.5 inch short	0.5
Ear No. 2 is 8.5 inches long, therefore nothing short	.0
Ear No. 3 is 8 inches long, therefore nothing short	.0
Ear No. 4 is 7 inches long, therefore 1 inch short	1.0
Ear No. 5 is 7.75 inches long, therefore 0.25 inch short	.25
Ear No. 6 is 8.25 inches long, therefore nothing short	.0
Ear No. 7 is 7.25 inches long, therefore 0.75 inch short	.75
Ear No. 8 is 7.5 inches long, therefore 0.5 inch short	.5
Ear No. 9 is 9 inches long, therefore nothing short	.0
Ear No. 10 is 8 inches long, therefore nothing short	.0
Total short	3.0

Therefore 1.5 points should be taken from standard. This makes the score 3.5 points for the exhibit.

In the same way the circumference may be measured with a tape line and the shortage figured and cut accordingly. The measurement should be made a little below the middle of the ear.

VARIETY CHARACTERS.

The color of the grain and of the cob, the shape of the kernels and of the dent in one variety are different from others. Therefore these are called variety characters. The ears in the exhibit should be true to the breed represented.

RULE—Any characters that do not represent the breed must be counted as against the exhibit and some must be counted off for the lack of exact breed characters.

TIPS OF EARS.

The tips of the ears must be well filled with kernels and well rounded like a fork handle, not tapering like a horn. The end of the cob must be entirely covered.

RULE.—If the entire end of the cob is exposed cut off 1 full point for each ear thus found. If little of the cob is seen, or the kernels are not of good size and shape, cut off as much as is thought proper.

BUTTS OF EARS.

These should be even and smooth. The rows of kernels must extend over the edge of the butt. The hollow, left after breaking off the shank, should be saucer shaped. and of medium size. The butt must not be large and open nor small and shrunken.

RULE—According to how much the judge thinks that the butts of the 10 ears lack of being perfectly formed butts, he cuts little or much from the score card.

KERNELS.

UNIFORMITY AND SHAPE—All the kernels should be alike in size, color, and other characters. The best shape is what is known as the wedge shape, with nearly square corners at the top and sides. This shape fills the cob best and gives the most shelled corn per ear. Round-top kernels or round kernels like those found at the tips of the ears are objectionable. The germs should be large.

RULE—With the blade of a jackknife pry out 2 kernels from each ear and lay them in a line, points down, in front of the ears from which they were taken. Look them over and push out of line those kernels that are different from the majority. Since there are 5 points for uniformity, each 4 kernels make one point. Therefore take off 1 point for each 4 kernels that do not remain in the line, or if there are 3 or 4 types cut more accordingly.

Do the same way to get the score on shape of kernels. Leave only the good, wedged-shaped ones in the line, and mark off 1 point for each 4 kernels not left in the line.

COLOR.

GRAIN AND COB—Whatever the color of the variety is it must be bright and clear. This indicates freshness and good quality. Sometimes a yellow ear of corn will have white or red kernels and white corn will have yellow kernels. Also yellow corn may have a white cob or white corn a red cob, but this is not a true variety character. They should be all of one color.

Rule—Cut 1 point for every 4 kernels of different color from that of the variety. Cut one-half of all the points if a red cob is found in white corn or a white cob in yellow corn, unless the cobs are all of the same color and it is common to the variety.

SPACE.

The space between the kernels is caused by the shape of the kernels. The rounded corners and sides make spaces between the kernels which should be filled up. When there is a good deal of space the percentage of grain to ear is not as large as it should be.

Rule—Examine each ear and keep in mind the relative amount of space found in each. When all the ears are examined make an estimate of about how much lost space there is altogether and cut the score accordingly.

PERCENTAGE OF GRAIN TO EAR.

The amount of shelled corn is an important point in an ear of corn. In most varieties of corn there is from 80 to 85 per cent of shelled corn to the ear; that is, in 100 pounds of corn 80 to 85 per cent is shelled corn and from 20 to 15 per cent is cobs. It is important to have a high percentage of corn per ear, as this means a big yield per acre.

Rule.—Take 5 of the ears from the exhibit and weigh them carefully on a grocery scale. Then shell them, being careful not to lose any of the kernels. Weigh the cobs and subtract this from the weight of the 5 ears. The difference is the weight of the shelled corn. By dividing the total weight of the shelled corn by the weight of the 5 ears, the percentage of grain to ear is obtained. For example: The 5 ears weigh 6¼ pounds, or 100 ounces; the 5 cobs weigh 1 pound, or 16 ounces, the shelled corn is 5¼ pounds, or 84 ounces. Eighty-four divided by 100 equals percentage of grain to ear.

With the standard as 85, cut 1 point for each per cent less than standard. Thus the above example of 84 per cent would be marked 9 on the score card.

GETTING TOTAL SCORE.

Add the scores of the different characters and the number thus obtained will be the score of the exhibit. Compare the scores of all the samples and those with the highest scores are sure to be the best ones for seed.

SCORE CARD FOR SEED WHEAT.

(Used in Minnesota)

Points noted	Standard score	Sample No..... score	Sample No..... score	Sample No..... score	Sample No..... score	Sample No..... score
1 Weight per bushel	25					
2. Uniformity and purity	10					
3. Color	15					
4. Plumpness	25					
5. Condition of bran	5					
6. Market condition	20					
Total points	100					

EXPLANATION AND RULES OF SCORE CARD.

An exhibit shall consist of 1 peck of selected grain and 12 selected seed heads with stalks at least 6 inches long.

To select the 12 heads, watch the field from the time the wheat begins to head until it is ripe. When an extra good head is found mark the place with a stake and tie a small white rag on the stalk of the selected head. In this way mark 50 or more heads that come out first and grow tallest and have the largest, best filled heads. Harvest all of these and then select the 10 best from them. Make a small bundle of the selected heads and tie the bundle loosely just below the heads and tightly at the base of the stem.

WEIGHT PER BUSHEL.

The standard weight is 60 pounds per bushel. Any sample weighing less should be given a lower score than the standard.

RULE—By means of a testing kettle get the weight per bushel. This may also be determined by weighing very carefully an even peck of the grain, then multiplying by 4, the number of pecks in a bushel. If the sample has a weight less than 60 pounds per bushel, cut 1 point off the score card for each pound less than the standard. Thus, if the sample weighed 55 pounds per bushel it would score only 20 points.

UNIFORMITY AND PURITY.

This is an important point in all grain intended for seed purposes and should be closely observed. The size and shape of the kernels will often help in judging the purity of the seed. For example: Fife and blue-stem wheat kernels are different. The one short and thick and the other long. All the kernels should closely resemble each other.

RULE—To judge the the score of uniformity of a sample examine it closely and estimate the relative amount of difference in size and in shape. Then judge about how near it comes to being pure. Cut the score according to how near the sample comes to being perfect.

COLOR.

The color of wheat has much to do with the quality. For example: If it has been frequently wet with rains, or has been heated in the bin, or has been frosted, the natural color is changed and the seed has been somewhat injured. Good seed wheat has a hard, flinty, clear color and good luster.

RULE—Keep in mind what perfect wheat should look like. Then see how near the sample comes to your idea, and mark accordingly. It is very seldom that a sample is marked perfect.

PLUMPNESS.

The plumpness of wheat is important to millers in making flour. The plumpest kernels have the most flour. For seed purposes plump grain is the best and gives larger yields.

RULE—The rule for judging this point is the same as for judging color. See about how near the sample comes to being perfectly plump and cut the score card in proportion to what it lacks in being plump.

CONDITION OF BRAN.

If the bran or seed coat is wrinkled, the milling qualities are reduced. The cause for the wrinkled condition may have been such as to injure the value of the grain for seed purposes.

RULE—Cut the score card according to the extent of the wrinkled or otherwise injured condition of the bran.

MARKET CONDITION.

Under this head are considered the amount of diseased or injured kernels and the dirt. All injured seeds are detrimental to the grain for seed purposes, therefore no such seeds should be found in samples of seed grain. Smutted or moldy kernels, cracked kernels, and dust or dirt should not be tolerated in seed grain.

RULE—Cut the score card according to the amount of dirt and dust and the number of diseased or otherwise injured kernels.

ADDING THE SCORE.

Add all the scores given under the six heads. The sum of these will be the standing or score of the sample. After all the samples have been judged, the scores can be compared and the best ones picked out of those with highest snore.

SCORE CARD FOR SEED OATS.

(Used in Minnesota.)

Points noted	Standard score	Sample No..... score	Sample No ..... score	Sample No..... score	Sample No..... score	Sample No..... score
1. Weight per bushel	25					
2. Plumpness and quality	20					
3. Uniformity and purity	20					
4. Color	10					
5. Market condition	25					
Total points	100					

EXPLANATION AND RULES OF SCORE CARD.

An exhibit must consist of at least 1 peck and 12 selected seed heads according to the method described for wheat.

WEIGHT PER BUSHEL.

The standard weight in Minnesota is 32 pounds per bushel. By means of a patent weighing kettle or by taking a 4-quart measure of the grain and getting its weight on grocery scales, then multiplying by 8, the weight per bushel can be obtained.

RULE—Cut 2 points from the score card for each pound less than the standard weight per bushel (32 pounds). Thus if the sample weighs 30 pounds per bushel, it would score only 21 points.

PLUMPNESS.

This character must be observed very closely, as the eye is easily deceived by the hull being well rounded out. It frequently happens that two kernels are inclosed within one hull. This makes the hull appear very plump, but in reality it is the opposite. One good way to judge plumpness is to squeeze a handful of the oats. If they do not spring much, they are well filled. Look closely at the tip of the hulls. I they are short and broad, they indicate plumpness, but if they are rather slender and pointed, the seed is either wanting or it is very small and poorly filled.

RULE—There is not set rule by which the plumpness may be scored. The judge should look carefully for poorly filled hulls, double seeds, etc. Then cut the score card about what he thinks the sample lacks of being perfect in plumpness.

UNIFORMITY AND PURITY.

The uniformity of the kernels is very important in oats for seeding and in determining the purity of the breed represented. All the seeds should be of the same general size and of an even color and should all be of the shape that represents the variety.

Rule—As in the case of plumpness, there is no definite rule by which to score. The judges must estimate the relative number that are not like the majority and cut the score card accordingly.

COLOR.

No matter what the color of the sample is, every seed should be of the color that represents the variety. A white variety should not be mixed with yellow or black or gray kernels, nor should a black variety have any but black kernels. The color should also be bright and clear.

Rule—For every five kernels of another color or variety cut 1 point on the score card. Also cut some for discolored or bleached kernels.

MARKET CONDITION.

Under this head are considered bad kernels, dirt, foul weed seed, maturity, etc. There is no excuse for oats being dirty or foul, therefore the market condition should be thoroughly examined and scored severely.

Rule—The judging of this point is very similar to that of plumpness. After inspecting the sample carefully, cut the score in proportion to the relative amount of dirt, poor or defective kernels, etc. If, for example, the sample has some dirt and weed seeds in it and shows signs of having been wet or has a good many bad kernels, ti could be cut to 20 points or more, depending upon the amount of dirt, etc.

It is difficult to tell how much dirt, etc., there is in the sample, get a sieve and sift out the dirt. Then weigh it and cut the score accordingly.

ORDER OF TOPICS FOR GIRLS' INSTITUTE (BREAD).

The Indiana farmers' institute has also suggested the following special topics for a season's meeting of girls:

First meeting—Winter and spring wheat—where grown, characteristics, and uses. The clubs should have samples of each for study and comparison.

Second meeting—Burr, roller process, and whole wheat flour—their characteristics, composition, and uses. The club should have and carefully examine samples of each kind of flour.

Third meeting—Yeast—its nature and uses in bread-making; effect of temperature on growth of yeast plants; hops in homemade yeast; wild yeast. Members will bring samples of homemade yeast mixtures, and also commercial yeast.

Fourth meeting—Bread—ingredients, mixing, raising, kneading. Study and use of score card. A loaf of bread is needed for demonstration.

Fifth meeting—Baking bread—the objects; time and temperature for; effect of over and under baking; general appearance; form; size; color of crust and crumb of a well-baked, standard loaf of bread. Members will each bring a loaf of white yeast bread baked a day before and each will score one or more loaves of bread.

Sixth meeting—Bread—examination and sampling of loaves of bread baked by the members the day before with mutual criticism. A second exercise by the members in judging bread by the score card.

GIRLS' BREAD CONTEST REQUIREMENTS.

In girls' clubs it is imperative to divide the members for contest purpose into two classes, since it is obviously unjust to expect or allow girls from 15 to 18 years of age to compete with those from 8 to 14. The by-laws respecting bread contests may conveniently be as follows, which will serve as a guide for other subjects, such as canning and preserving fruit, sewing, etc.

[Used in Indiana.]

1. Each contestant shall agree to bake at least 25 individual loaves of bread between the 1st of May and the 1st of November.
2. Each contestant shall agree to exhibit two loaves of bread at the annual show.
3. Each contestant shall do all the work without any outside help.
4. Each contestant shall keep a record of the details concerning the work done. (See record card.)
5. Each contestant shall write an essay, of not over 400 words, giving record of number of loaves baked in summer, kinds of flour used, sources and kinds of yeast, the manner of baking, cooling, and the storing of bread, and the length of time required for each process in bread making.
6. Each contestant shall agree to write a second essay of not over 400 words on the history of bread, bread as made in other countries, what yeast is and how it grows, the manufacture of flour, the difference between hard and soft wheat flour, the quality of a loaf of bread as affected by the wheat and the flour entering into its composition.

RECORD CARD (BREAD).

The following record should be carefully kept and filled out by each contestant:

(1) Receipt in full.
(2) Manner of making:
  (*a*) Kind of yeast used.
  (*b*) How long was dough rising before molding into loaves?
  (c) What was temperature of dough when set to rise?
  (*d*) How long rising the second time?
(3) Was oven very hot when bread was put in to bake?
(4) How long baked?
(5) How cooled?

COOKING.

The following card for scoring bread, together with its explanation, is offered as a suggestion to be followed or modified as is expedient in each case, and will serve as a guide to the preparation of score cards for other subjects in home economics. It is the card used by the department of household economics in Purdue University:

SCORE CARD FOR JUDGING BREAD.

	Standard	Score
Baking:		
Thoroughness	20	
Color (shade 6, evenness 6)	12	
Shape	8	
Taste:		
Sweetness	25	
Flavor	15	
Appearance of crumb:		
Texture, quality	8	
Fineness	4	
Evenness	3	
Color	5	
Total	100	

EXPLANATION OF SCORE CARD.

In judging by a class there should be a careful explanation to the class of the meaning of each point on the score card. The loaf should be judged as to its external appearance before being cut. The first point noted after cutting should be in regard to the thoroughness of baking, then second as to sweetness, third as to flavor, and after this the other points concerning texture, etc. The bread should then be scored by the official in charge and an explanation of the reasons for her scoring should be given.

The bread should be so completely baked that when pressed upon it will immediately spring out upon release of pressure. The color should be golden brown top, sides, and bottom. The bread should be baked in individual pans, size 9x4½x2¾ inches. The last measure is the depth. The loaf should be evenly raised in the pan, with no cracked, protruding, or uneven crusts.

There should be no trace of acidity in the taste, nor should there be distinct sweetness due to sugar, and the flavor should be rich and nutty. The bread when cut should have soft, velvety texture, all harshness absent. It should slice smoothly without crumbling. The holes should be numerous and small and of uniform size. Occasionally large holes are a serious fault. The color of the crumb should be slightly creamy white in white bread and a light even brown in whole-wheat bread.

FARMERS' INSTITUTES FOR WOMEN.

U. S. DEPARTMENT OF AGRICULTURE.

An important problem in education in the United States is that of reaching country women with information suited to their needs. Although to a great extent the mental, moral, and physical welfare of the family depend upon the home keeper, yet her opportunities in the country districts for qualifying herself for fulfilling these duties are chiefly such as she can create for herself. Although a large amount of domestic science instruction for women is being given, it is for the most part confined to resident students in educational institutions in towns and cities. Comparatively little is being done in this direction in the rural schools, and almost nothing in the way of peripatetic instruction for country women by the state at large.

NEED OF MORE EXTENDED KNOWLEDGE OF DOMESTIC DUTIES.

While knowledge of domestic duties is probably as extended and general among country house-wives as is knowledge of field operations by their husbands, yet in both cases there is great need for more accurate information respecting the principles upon which successful practice in the home and in the field are based, and while both classes would be greatly aided by additional instruction in their respective duties, the importance of such instruction to the housewife is far greater than a corresponding amount of information to the worker in the field. Ignorance of operations in the field is felt chiefly through impairment of the quality or reduction in the amount and value of the crop. Ignorance in the home is a much more serious matter, in that through food improperly prepared and sanitary conditions neglected the life of the worker is often endangered and not infrequently destroyed. A poorly nourished body, whether of man or animal, is inefficient no matter how well bred or how well equipped for service it may be in other respects. Good food well prepared and proper hygenic care maintain health and add to the working power not only of the well and strong, but by these means the weak and helpless also are enabled to gain strength and become efficient aids in family support.

THE FIELD OF WOMEN'S WORK.

The selection and cooking of food are, however, only two items in the duties of the country woman. If knowledge of these were all that the housewife required, the question of supplying this information would be comparatively simple. There are other problems, such as those connected with the rearing and education of children, the clothing of the family, the providing of home conditions that are sanitary, the social, intellectual, and æsthetic improvement of the housewife herself.

The ideal home is a social and cooperative society in which all of its members unite their efforts for the common good. This ideal is realized most nearly in the country home, where even the smallest child has opportunity to be and generally is a contributor to the family support. It has come to be a recognized fact that boys and girls, healthy, industrious, frugal, capable, intelligent, self-supporting, cheerful, and patriotic, abound in country homes, and that the prevalence there of these high qualities is largely due to the family life, which requires each individual from his earliest years to bear his proportionate share in providing for the maintenance of the home. By bringing within the reach of country people educational advantages suited to their needs, rural life becomes more attractive, country homes are multiplied, and the valuable qualities which these homes develop become the possession of a correspondingly larger number of the citizenship of the state.

RELATION OF WOMEN TO RURAL SCHOOLS.

The relation that women sustain to the rural schools as teachers of the youth of the country is most important, and furnishes a potent reason why they should have special training for rural-school work. They are by great majority the instructors not only in the rural schools, but in the town and city schools as well, and the future nation consequently will depend very largely for its efficiency upon the manner in which these teachers perform their work.

The reports of the bureau of education for the last three decades show that the tendency is toward lessening the percentage of men teachers and increasing the proportion of women teachers in the public schools of the United States. In the year 1870-71 the percentage of men teachers in the public schools was 41. Since then the proportion has steadily diminished until in 1906-07 the percentage of men teachers had fallen to 22.3. In three decades, therefore, the proportion of women teachers has risen from 59 per cent to 77.7 per cent. The effect of this upon the future industrial efficiency of millions of school children in the United States is well worth considering by those who are interested in rural betterment, especially when it is remembered that 35 per cent of these children live in country homes and are consequently cut off from the superior advantages that the town and city schools afford. The fact, too, that household, economy must ultimately be taught to girls in the rural schools as it now is in many of the towns and city schools, makes it doubly important that country teachers shall have opportunity to fit themselves for giving this instruction.

EDUCATION ADAPTED TO WOMEN.

As yet no comprehensive system has been put in operation by which the state shall be responsible for supplying educational facilities specially designed for reaching country women at their homes. While the farmers' institute has done something in this respect, yet until quite recently its efforts have been chiefly in the direction of assisting men, leaving the women to depend upon themselves, or at most to gather what they can from the teaching which the men receive. It manifestly is not meeting country needs when the education furnished is adapted to the needs of the male population only, for that assumes that the problems of country living all lie outside of the walls of the house in which the family dwells. Instruction helpful and adapted to the needs of country women should be provided as well, in order that their influence, whether exerted in school or church, the social circle, or in domestic life, shall be most beneficial to the family and the state.

THE MAGNITUDE OF THE WORK.

According to the census there were in all 37,244,145 women and girls in this country in 1900. About 35 per cent of these, or over 13 millions, lived in the rural districts. To reach this great multitude with even limited educational facilities for the study of domestic science and household art, will require a radical change in the methods heretofore pursued.

But the introduction of the study of domestic science and household art into the rural schools, the high schools, and the normal schools is only a part of the work that will be required. Winter schools for adult women will have to be organized; movable schools in large number will have to be sent out; suitable demonstration schemes will need to be devised; expert advisers to visit country women will have to be employed; and publications adapted to the capacity and needs of rural housewives will have to be introduced into their homes.

It will take many years to perfect a system that will properly meet the educational requirements of women who live in the country districts, but that it is possible to establish such a system is shown by what has been accomplished in this direction by some of the more progressive nations in foreign lands. Austria, Belgium, Sweden, Norway, Denmark, Switzerland, France, and the German states have for many years been engaged in conducting schools of domestic science and home economics specially adapted to country people, and also courses of study in these subjects for students in fixed institutions in towns and cities. Although conditions abroad differ from those prevailing in the United States, yet the general methods that have been found serviceable in foreign countries can no doubt be so modified as to be equally valuable here.

INSTITUTES SPECIALLY FOR WOMEN.

In securing the introduction of instruction in domestic science and household art into rural communities, no better agency exists in this country at present than the farmers' institutes. Work of this character has already been begun. Last year 732 meetings for country women were held by the farmers' institute directors in the several states. The reports that follow indicate the states that have been engaged in this work and the extent to which it has been carried. A simple inspection of these brief reports will show how far short what is being done comes of meeting the needs of rural people.

The need for this instruction is so important and universal that it manifestly ought to have a place in every educational institution in which women and girls are taught. By organizing women's institutes and local clubs for women and girls, and by sending out a body of capable lecturers to give instruction in domestic science and household art at their meetings, the way can speedily be prepared for securing later the introduction of these studies into the educational system of the country until ultimately domestic science and household art will be recognized as essential features in every well-rounded system of instruction, irrespective of the location of the school, city or country, or of the occupation of the people, whether on a farm or in conducting the affairs of a household in the midst of city life.

FORM OF ORGANIZATION.

No uniform system has yet been adopted for the organization of women's institutes. In most instances they are conducted along the same lines as the general institutes for men, except that the subjects for discussion are specially selected with reference to women's life and work.

If institute work for women is to be undertaken in any extended or comprehensive way, it will be necessary to adopt some method for conducting it that will secure the best results so far as imparting instruction is concerned, and also insure its perpetuity and development. While no single form of organization could probably be devised that would be equally well adapted to all the various conditions existing in the several states, there nevertheless is some advantage in having at hand a general outline that might be pursued in whole or in part if circumstances were favorable to its adoption.

Although a number of plans are in operation, any one of which would be serviceable in directing the women's institute movement, there is one in particular that has been quite definitely worked out and tested until it may safely be suggested as worthy of special consideration by institute directors. It is the plan in use in the state of Illinois. In that state institutes specially for women have been organized in connection with the farmers' institutes and have been in successful operation since 1898. The system of organization is precisely the same as for farmers' institutes; that is, one woman's organization for each county working in conjunction with the county institute for men, and conducting at least one session for women at each annual meeting. Any number of additional local organizations or auxiliary clubs may be formed and conducted in a county, upon any plan that may be considered most convenient and helpful. The feature in the system that specially commends it is the county organization of women working in connection with the county farmers' institute organization for men.

The following form of constitution adopted for the women's county associations shows the character of the organization its purposes, and its relation to the institutes for men:

CONSTITUTION FOR COUNTY ASSOCIATION.

ARTICLE I.

SECTION 1. The name of this organization shall be The Association of Domestic Science.

ARTICLE II.

SECTION 1. The object shall be to promote the interests of the home by a careful study of the following subjects:

SEC. 2. The composition of foods and the combinations and preparations best calculated to meet the needs of the body, and to insure its highest efficiency.

SEC. 3. The relation of bad sanitation to disease, and the means of excluding from the home and its surroundings the organisms and conditions that threaten the health and vitality of the family.

SEC. 4. The architecture of the house as regards the comfort of the family and the convenience for performing the labor of good housekeeping.

SEC. 5. The arrangement of the kitchen as a working laboratory, and the utensils and devices that are useful in cookery.

SEC. 6. The correct principles and best practices of domestic science, not only to better the home but to reduce the labor of housekeeping.

SEC. 7. The instruction of the young that they may become skilled in the knowledge and performance of the things that relate to domestic science, to the end that the health of the coming generation may be preserved, and the comfort of their homes assured without an expenditure of time and energy so serious as to exclude or abridge the accomplishments of life.

ARTICLE III.

SECTION 1. The officers shall consist of president, vice-president, secretary, and treasurer.

SEC. 2. The officers shall be elected by ballot at the annual meeting and a majority of the votes cast shall elect.

SEC. 3. The program committee shall consist of the president and secretary and two other members to be appointed by the president.

ARTICLE IV.

SECTION 1. The duties of the officers shall be such as usually pertain to these offices, and such as shall arise from the provisions of this constitution, or of by-laws that may be enacted.

SEC. 2. It shall be the duty of the program committee to be active in promoting the interests of the association, and to arrange programs for its meetings.

ARTICLE V.

SECTION 1. An annual meeting shall be held for the election of officers and for the transaction of such other business of the association as conditions may make advisable.

SEC. 2. Regular meetings shall occur as provided in the by-laws, and special meetings may be called at any time by the president.

SEC. 3. The members present shall constitute a quorum for a regular meeting, but a majority of the total membership shall be necessary for a quorum at a special meeting.

SEC. 4. Except in amending the constitution, all questions before the association shall be decided by majority vote.

ARTICLE VI.

SECTION 1. Any person may become a member of this association by signing the constitution and meeting the conditions the by-laws.

BY-LAWS.

Each organization formulates its own by-laws, but the following form has been generally adopted by the county associations:

ARTICLE I.

The time of meeting shall be the first Thursday in each month, at 2 o'clock, except the months of July and February, at which the time is 10 a. m. and 7 p. m., respectively.

ARTICLE II.

Any lady who is over the age of 14 may become a member of the association by signing the constitution and paying a membership fee of 25 cents. If the fees are not sufficient to defray expenses a small tax may be levied on each member by a vote of the association.

ARTICLE III.

Any person is entitled to a vote who is in good and regular standing in the association.

ARTICLE IV.

The work of each meeting shall be in the hands of the program committee, and each topic read shall be open for discussion.

ARTICLE V.

The annual election of officers shall be held at the meeting in January of each year. The yearly dues are to be paid at this meeting also.

ARTICLE VI.

Five members shall constitute a quorum to do business and may properly transact any business that shall come before the meeting.

ARTICLE VII.

A fine of 5 cents for not responding when on program.

ARTICLE VIII.

When serving refreshments not over four articles to be furnished.

There is also a central state organization of women known as the "Illinois Association of Domestic Science." This state association holds one meeting each year in conjunction with the regular state organization of farmers' institutes. It is composed of two delegates from each county organization.

The following form of constitution prescribes the method of organization of the state association, and indicates its purposes:

CONSTITUTION OF ILLINOIS STATE ASSOCIATION OF DOMESTIC SCIENCE.

Article I.

Section 1. The name of this organization shall be The Illinois Association of Domestic Science.

Article II.

Section 1. The objects of the association shall be to stimulate interest in all that pertains to home making; to induce the organization of domestic science associations to co-ordinate the work of such associations, and to labor for the introduction of the study of domestic science into our educational system.

Article III.

Section 1. The following persons may be members of the association:

Sec. 2. Delegates from county domestic science associations organized in connection with the county farmers' institutes.

Sec. 3. Delegates from domestic science organizations of Illinois not affiliated with county farmers' institutes. In counties in which no domestic science association has been formed in connection with the county farmers' institute, the president of such county institute may appoint delegates to the meeting of the state association, and such delegates shall enjoy full membership, with privileges accorded other delegates.

Sec. 4. The officers of the year shall be members of the association without reference to their appointment as delegates.

Sec. 5. Each county association and other housekeepers' clubs shall be entitled to two delegates.

Article IV.

Section 1. The officers of the association shall be a president, a first vice-president, a secretary, and one vice-president for each congressional district.

Sec. 2. The president, first vice-president, and secretary shall be elected by ballot at the regular annual meeting of the association, but the vice-presidents shall be elected or appointed at the several congressional institutes in any manner said institutes shall determine, and in case of no election or appointment the vacancy shall be filled by appointment by the president of the state association.

Article V.

Section 1. The duties of the president and first vice-president shall be such as usually devolve upon such officers.

Sec. 2. The secretary shall keep a record of all meetings of the associations, of the meetings of the executive board, and perform such other duties as usually devolve upon such officers.

Sec. 3. It shall be the duty of the vice-presidents of the congressional districts to be active in the formation of county and local societies and to be responsible for a domestic science meeting at the time of the congressional institute.

SEC. 4. The president, vice-president, and secretary shall constitute the executive board of the association.

SEC. 5. The duties of the executive board shall be to look after the business of the association during the year and provide a program for the annual meeting.

ARTICLE VI.

SECTION 1. The state association shall hold its annual meeting at the same time and place as the Illinois Farmers' Institute.

ARTICLE VII.

SECTION 1. Unless otherwise provided, a majority vote of the delegates present shall decide a question.

ARTICLE VIII.

SECTION 1. This constitution may be amended at any regular meeting by a two-thirds vote of the members present, notice having been given at a previous meeting.

The farmers' institute of Illinois voluntarily aids in supporting the women's institutes, although there is no special provision of law requiring them to do so. This weak part in the Illinois system has been corrected in some of the other states. In Indiana a sum is required to be paid out of the county institute appropriation to the women's auxiliary not to exceed in any year the total receipts from membership dues. In Utah the law provides for a pro rata apportionment for women's institutes, and recognizes them as organizations under the care of the state upon a parity with institutes for men.

In the province of Ontario, Canada, where institutes for women have been most successful, a grant of $10 per year is allowed to each women's institute upon condition that an equal sum be granted by the county council or municipality in which the institute is organized, or by the local farmers' institute.

Illinois differs also in her system of women's institutes from the other states in that the entire control of the work for women, both local and state, is in the hands of the women's organization. In the other states, while the local organizations are under the immediate control of the women, the state department of farmers' institutes has general supervision over their work, the same as it has over institutes for men. There is no separate state organization or board of control for the women's institutes, but one institute director in charge of both. The latter method of control identifies the women's institute more closely with the general institute system of the state and is for that reason to be preferred.

In Indiana when women's auxiliaries are maintained separate and distinct from the county institute organization, and work under separate programs, before they can receive aid from the institute fund they are required to report to the president of the county institute the names of those in attendance at their meetings who have paid a membership fee of not less than 15 cents for the year. There must also accompany this report a statement of the expenses of the auxiliary for the year, which may include prize money offered for experiment work in agriculture or domestic science research; rewards for extraordinary excellence in agriculture or domestic science; the money cost of competitive work of an eduational character along the lines of agricultural, horticultural, or domestic-science development, provided that the scheme or plan of all such special work shall have been adopted by the county institute at its last annual session.

Upon compliance with these conditions these auxiliary organizations become, under the law, a part of the county institute, and the reports of such auxiliary organizations are required to be combined with the report of the county institute. By this method, while the autonomy of the women's institutes is recognized and preserved, they are nevertheless under the general administration of the county institute.

THE KIND OF INSTRUCTION THE WOMEN'S INSTITUTES SHOULD GIVE.

The object of the women's institute is to do for the woman in the home what the institute is endeavoring to do for the man in the field, namely, increase the efficiency of the individual and cause her to take new and more intelligent interest in her occupation. The women's institute, therefore, should endeavor to reach every country home with a school of domestic and sanitary science and household art; should strive to introduce labor-saving appliances and conveniences into every home; should endeavor to bring about conditions whereby leisure and opportunity for social enjoyment and self-improvement can be secured by every rural family, and whereby good literature, music, and artistic skill may be introduced into and enjoyed in every country home, and the latent talents of country women, intellectual, social, and religious, be developed and employed.

Farmers' institute directors who have not already begun the organization of institutes for country women, or who have not taken up this work in a vigorous and determined way, should seriously consider their obligation to aid the housewife with instruction as well adapted to her surroundings and needs as that they are now furnishing is to those who work in orchards and vineyards or out upon the farms.

APPROPRIATION FOR WOMEN'S INSTITUTES.

The funds that are provided for institute purposes are of the public money and no law in any state has yet directed that the appropriation shall be used exclusively in providing institutes for men. It is no answer to this to say that the institute is open alike to men and women so long as the instruction which the institute imparts is directed and adapted almost exclusively to the lines of work which men pursue.

The time seems to have come when not only the question of separate institutes for women should be considered, but that of a division of the funds for institute work as well, so that a share shall be devoted to itinerant instruction for women and for the general uplifting of domestic life in the country home equal to that which is now expended for the improvement of men's work in the orchard, stable, and field.

EDUCATED MOTHERHOOD.

BEFORE MAHASKA COUNTY FARMERS' INSTITUTE, BY MRS. L. E. CORLETT, OSKALOOSA, IOWA.

Our language teems with praises of motherhood. Poets have used the theme for their sweetest strains. Orators, for their most pleasing periods, ministers for their most stirring sermons. A mother is the common and crowning possession of all mankind. Great men of the world have taken the laurel crowns from their own brow and brought them to the feet of their mothers as the place where honor belongs. No office in the world is so honorable as hers, no priesthood so holy, no influence so sweet and strong. Whether educated or ignorant, cultured or crude, free or fettered, refined or repulsive, a mother and a mother's love is the crown of life.

For the tremendous responsibility of motherhood—the bearing and rearing children, the companion and mother of men—no woman can be too well equipped, too well prepared, mentally, morally and physically. Women should aim at perfection. Education in the true sense, is to obtain the qualifications for life—for living in the best, the broadest, the highest, the deepest sense possible to the finite. The education of women has passed beyond the experimental stage in this A. D. 1911. Education has been the torch for the civilization of the world and more and more do women borrow fire from this torch to shed light upon the duties belonging to their sex.

It is a mistake to think that education is furnished alone by the schools. There are five great educational institutions, the home, the school, the church, the social life and the state, though the two last might be classed as one. Each of these gives a kind of education peculiar to itself and all necessary for the perfection of the finished product—an educated man or woman.

The first and most important of these educative agents is the home, and because "as is the mother so is the home" her attainments count so greatly. If we are to enter more and more into an age of culture, rich in arts and science we must have not only the man who knows but the woman of wisdom also. Indeed the woman who has almost absolute control over the next generation needs more wisdom than does the man. So long as the training of children centered in the slipper and the switch, an ignorant mother was not at a great disadvantage— the muscular development being the telling distinction. Nowadays the child of the educated mother has an enormous advantage over the child of the uneducated mother—other things being equal. No education, no culture in the mother can compensate for lack of character. Character without education is infinitely better than education without character. It is the strong character of the mothers of the preceding generations that has brought forth such a noble progeny that has made our country what it is. But a desirable character plus an education is the true ideal, and it is attainable. President Jordon of Leland Stanford University says, "To be wise and at the same time womanly is to wield a tremendous influence which may be felt for good in the lives of generations to come." Oliver Wendell Holmes replied to the question, "When should a boy's educatoin begin?" by saying, "With his great grandmother." If any discrimination is to be made between the boy and the girl, educate the girl. She needs it even worse than her brother.

Women who are the mothers of today and have not been able to secure much schooling in their education, may console themselves that "she who does the best her circumstances allows does well, acts nobly, angels could do no more." My dear woman, as you realize and bemoan your own limitations because of the lack of schooling, see to it that your daughter is better equipped to perform her duties as wife and mother than are you. In my school work many pathetic things come under my notice. Only at the beginning of this semester during registration a mother came bringing her daughter to enroll. The wistful look, the mournful tone, I shall never forget, as the dear lady said, "Oh, I wish I might enroll myself. I had to quit school before I was through high school and I have never been satisfied." Bless the dear mother. She is doing the work of her home without her daughter's aid, denying herself of the pleasure of that daughter's companionship and the cheer attending a young girl's presence in the home, that the daughter may have the school training the need of which the mother has felt all her life and the desire for which is yet unquenched. All honor to such mothers!

Let me drop what I hope will be a word of cheer to such hungry minds. Even though you can't go to a university, you can bring the university of the world to yourself. Fill your reading tables with the best books and magazines. You know Mr. Dooley says, "Readin' is the next best thing this side of goin' to bed for restin' the mind." While you rest your bodies rest your minds too in Mr. Dooley's way. Sweeping, scouring, darning, washing, ironing, cooking, sewing, are not teeming with novelty nor wildly fascinating, but each housekeeper should have her mind so stored with pleasant thoughts that such toil may be surrounded by happy halos of memory or bright anticipation of future joys. Try memorizing some poems as you do dishes. Plan your work to include some method of self improvement. Join a club. Make your life brighter, sweeter, more complete. The more thoroughly a woman's mind is developed and disciplined, the better fitted she is to manage a home. A knowledge of science is inseparable from the work of the kitchen, wherever that knowledge be acquired. Ethics is studied and taught in the nursery, belles-lettres in the parlor, mathematics in domestic economy, bookkeeping in the household accounts and the power of thinking everywhere about the management of the house.

Education is best defined as the process through which the individual realizes herself—makes her fit to live in the institutions of civilization, to co-operate with them, and to enjoy their friends. Colleges are the open door to such realizations. The college education of women has been and will be the greatest aid to self realization. Women students have met men in almost every field of human understanding and have little to regret in the showing made. Colleges and universities are opening wide their doors to young women and their halls are thronged. The college woman is proving an ideal wife and mother. She is the joy and adornment of her home combining as she does excellent taste in furnishing her home, devotion in rearing her children and an industry and practicability, which insures domestic happiness and prosperity. Such a woman is as expert in the kitchen as she is graceful and cordial in the parlor She can adapt herself to any circumstance in which she may be placed. If success smile on her husband, and they have a competency, she will be equal to gracing his home and moving easily in the best social circle. If the hired help should go on a strike a good dinner would be forthcoming anyway. If the wheel of fortune turns' in the wrong direction such a woman is ready to assume her share of the burdens, to encourage, to assist, to make sacrifice and if need be to put her own talents and ability into the commercial field. An educated woman's home should be among the best ordered households extant. Systematic industry, studious application and methodical division of time tells in the household as in any other department of labor. The wail against the servitude of the housekeeper does not arise from the woman of the trained mind. While a knowledge of Latin or Greek does not exactly aid in the scrubbing of a kitchen floor or cleaning of the sink, yet the disicipline of those studies do help in the management of household affairs and in no way hinder the effectiveness of the scrubbing. It is the woman, mediocre in mind, extragant as to dress, simply desirous of the momentary pleasures of personal ease, whose chief recreations are gadding, gossiping and picture shows, it is this woman whose home is neglected, whose children run the streets, whose tables are furnished from tin cans and the bake shops, and whose husband furnishes the patron for the billiard hall and the drunk shop.

Educated motherhood shall be judged in the last analysis by her children. The mystical web of the "Lady of Shallott" becomes uninteresting and inane beside the tapestry of human character which mothers weave in the rearing of their children. This tapestry which will outlive the stars and which is to furnish the future temple of Fame. I want to enumerate a few of the characteristics of such a mother.

An educated mother does not accept her child as perfect. She does not shut her eyes to facts—she accepts her child as human, therefore imperfect, and with never ceasing love and care trains it in the way it should go. She does not condone impudence by calling it smartness, nor disobedience by calling it high spirit, nor selfishness as knowing how to take care of number one, nor untruthfulness as sharpness, nor laziness as being not feeling well. Her mother love recognizes these evils, and does its best to eradicate them. She will teach her children the primary virtues of cleanliness, the value of truthfulness, regard for the rights of others, disdain for cowardice, respect for elders and superiors, reverence for things high and holy. She will not be cajoled into yielding. Mildred wanted permission from her mother to do something which had been forbidden. Little Miss Frances Fay, aged 2 and one-half years, gave this sage advice to her sister, "Futh for it, Mildred, futh for it, and you'll get it." Helen, upon being held strictly to account for her actions sobbingly said, "Had I known you were a school teacher, mother, I should have advised father not to marry you." There was a boy once in Judea who was called "Wonderful" and the most significant fact recorded of his boyhood is in Luke 11, 57, where we read. "And he went down with them and came to Nazareth and was subject to them." The next verse is a direct result of a child's being subject to his parents and holds today no less than 1900 years ago, "And Jesus increased in wisdom and stature and in favor with God and man." In the vital part of his boyish obedience, lay the secret of his future perfect manhood. The educated mother recognizes the value of obedience and insists upon her children being obedient to authority.

The educated mother will not trust the religious training of her children to others. The religious education of children goes to the very foundation of character and such training is often delegated to the Sunday School and the church—to any young person who happened to be a Sunday School teacher, thus resigning the sweetest and strongest influence to others. The educated mother will lead the way in this part of her children's education herself and when her children are men and women, yes when they are old men and women, her teaching will be ever fresh in their memories. The memory of Bible lessons at mother's knee are among the sweetest and dearest of life. Sunday Schools have their work. They should supplement but not supplant the work of the home. For children whose religious training is neglected at home, Sunday Schools are a heavenly thought, but no Sunday School or Sunday School teacher can take the place of the good mother who gathers her children about her, and out of the fullness of her love for them of her deep religious convictions and the worship in her heart, teaches those children of the great Father of all and of His love and mercy.

An educated mother will make home the sweetest spot on earth. It will be far more than many homes are—a place to eat and sleep only. Children will be the ornaments and adornments of this home—a place of order and respect, a temple of love and purity. The place of tender sorrows, of ten thousand touching memories. This home may be any sort of a house, but the beautiful spirit within makes that house a home. It is in such homes that the fine initial touch is given the sons and daughters that is not effaced through life. In such homes they receive the inpressions that make them a blessing to mankind, a power for good, a foe to evil.

An educated mother will demand and in time secure the ballot. I realize that this is a question upon which women have diverse opinions. Were we of one mind the ballot would be ours now. There are worm eaten arguments against women having the right of suffrage. She is not sufficiently informed, she cannot fight in time of war, she is too good, etc., etc. One might reply to these arguments one by one. All women may not be sufficiently informed, but are all men? She cannot bear arms, but she does bear soldiers and to do that she faces a Gethsemane of suffering besides which the facing of a maxin bullet is but play. She is not too good, nor too evil. It is not that she fears the country is going to rack and ruin or that she has an intense desire to run affairs governmental, but that the thinking woman endowed with intelligence will want to enforce her home training by making surrounding conditions consistent with her teaching. A woman might have an opinion upon the tariff question, she might be interested in national concerns, she might have a hand in affairs of state— in fact, I believe she could do as well in the election of senator as our state legislators are apparently doing but 'tis in local affairs where she is vitally concerned. I assert that she could express this concern in a vote without the loss of womanliness or any sacrifice of womanly qualities. Who is more vitally concerned in public utilities, in the price of gas and electrcity, in sanitary conditions, in public shools, in the abolition of saloons? Did the success or failure of the saloon petition mean more to Oskaloosa men than to the women? Do you think the women of this town and surrounding country, who are the wives and daugthers and the mothers of saloon frequenters are not interested in those saloons being put out of business? Could they vote, thereby being eligible to sign a saloon petition, would that petition have been so near the required mark? Voting for women is not the panacea for all ills. It will not make a vicious woman pure, an ignorant woman enlightened, a vulgar woman a Vere de Vere, but neither will it take away one whit from the culture, the refinement or the charm from any woman. Women will grow in enlightenment, in broadening of interests, in effectiveness as a home-maker, and make no sacrifice of any lovely or admirable trait by voting. The educated mother of the future will wield more power to protect her home by the ballot than in any other way.

An educated motherhood means fewer divorces, fewer broken homes, fewer wrecked lives. The woman who stays in college till her graduation has reached the age when she knows what marriage means. Very few college couples are hanging round the divorce courts. The marriage of a college bred man and woman, or a marriage of either is usually for keeps. There is no better place to go wife hunting, young man, than to the college campus.

Having been tided over the silly sentimentalities of sweet sixteen, the college maiden is sufficiently sensible to let her head as her heart be consulted when it comes to the question of matrimony. With the consent of the heart and head, a marriage is made which bears the impress of Heaven. In such a union the words "Whom God hath joined together," are not a mockery.

Even China long considered the most prominent relic of antiquity is now beginning to move toward her great desire for modern civilization in a manner which will bring results. She is now making the foundation of her reform the establishment of Girls'Schools in may of the large cities of that great country. The Chinese say "Just wait a few years and see what place we take in the family of nations when our educated girls grow up and become mothers." It appears that the inquisitive Chinese have discovered one of the secrets of Western civilization which the European and American too often overlook—possibly because the public speaking and public writing is done by men.

All honor to motherhood! to motherhood of all kinds! There is one class of mothers to whom more honor is due than to any other. That is *consecrated motherhood*, be it educated or uneducated. Let me give you an example of consecrated motherhood, or rather of fatherhood and motherhood.

You Iowa farmers are justly proud of the fertility of your soil. I want to tell you of the products of a 40 acre farm in South central Illinois. The farm house was merely a shack, boards set on end and the interstices covered with lath, and contained one room, an attic, and a lean to used as a kitchen and dining room. On this clay soil forty, in this small habitation were born and reared ten children. The parents were from the "Auld Sod" and were extremely ignorant in the wisdom of books and were correspondingly anxious that their children should be educated. By the hardest and closest economy these children were kept sufficiently well dressed and sent every day to the district school. The little Wabash river flowed between home and school and many a morning did the good father lead the older children across the foot log—the only available means of crossing—when the water ran over the log and then returning carry the younger ones across so that all could be at school. Day in, day out, term in, term out, year in, year out, did these faithful parents toil and contrive to keep their children in school. The children studied and acquired all the district school could give them, then taught district schools, saved their money, went away to higher schools of learning, the older helping the younger ones until from this humble home there went forth into the world's work ten able bodied, clean, pure minded, well educated specimens of Irish-American manhood and womanhood. Today ten refined, cultured homes with happy families capable of enjoying the finer things of life have been established by the children of that clap-board shack on that clay soil forty. Estimate the value of your home and family, multiply that amount by ten and you'll have an approximate value of the products of that little farm—the result of consecrated parenthood. I knew the father and mother. I am proud to number them among the great men and women of earth. They have gone to their reward and their children call them blessed.

Poverty is a great incentive to study. The south half of the great state of Illinois, before the owners woke up to the value of the land for fruit culture, was very unproductive and with difficulty could a living be wrested from the soil. Boys and girls growing up in this region saw no chance on the farm, so they crowded the schools, often making their own way through, but getting through creditably. Soon Egypt as it was derisively called was furnishing the professional men and women for the state. In northern Illinois the soil was so productive the farmers could not spare the services of son or daughter from the farm. The dollars brought by the corn, the cattle, the hogs, completely obscured the vision of the children's future. They were not given the opportunity of obtaining an education except in rare instances. Are Iowa parents suffering from this same myopia? Does the dollar of today shut out the view of your child's life? Let me urge you to send your children to school even if you have to turn a few cows dry. Send the children to school whether the corn is gathered or not. An education is something which once gotten, no one can take away. A college education may not be practical for every child. A $1,200 or $2,000 education will make little impress on a ten cent mind, yet the child upon whom a try would be wasted is rare. The mission of education is not alone to prepare great minds for great things, but it is to prepare small minds for greater things than would have been possible otherwise. No parent should let either boy or girl enter life with any less preparation than the best they can give. A few hundred dollars can be risked on the experiment. I wish you might witness the transforming power of an education.

When I was in college there appeared a tow headed, leather skinned boy from the everglades of Florida, uncouth, ungraceful, unattractive, the greenest ever, seemingly hopeless. He was stolid in countenance, slovenly in dress, rude in manner. He entered school, slowly at first, did he move; his mind seemed stagnant, his speech ungrammatical, his very attitude repelling—all these characteristics changed subtly but unmistakably and in time this poor, hopeless white from the Florida everglades became one of the clearest thinkers, the brainiest students of the class. By degrees his speech conformed to the rules of syntax, his dress to the demands of polite society, and his manner to the custom of true politeness. He graduated and went to Yale for a post graduate course. Here his ability was soon recognized and today he is a member of Yale faculty and is yet under thirty. Such is the transformation of a mental awakening. Of course, measured by dollars, his professorship at Yale is not as valuable as your Iowa farm, but money cannot estimate the value of his service to humanity as between what it is now and what it would have been without his education. Give your boys and girls a try out. Give them the grind-stone of college advantages to see what brains they have and how they may be sharpened.

Americans are proud of their patriotism. The patriot desires the nation of which he is a part to become the strongest nation in the world. The strength of a nation lies in its homes. The national standard of integrity, of morality and statesmanship generates from the homes. The men who directly guide, guard and uphold the nation—its statesmen, its soldiers, its citizens—come out of those homes and are a power for good or evil according to the mental, moral and physical health of the mothers who bore them and the atmosphere of the homes in which they were reared. The world needs the best and wants the best. The coming years will have greater importunities and the coming woman will meet them with greater capabilities. She will strive to reach the pinnacle of her powers and utilize to the full every talent God has given her. Educated motherhood will be found ministering to the ennoblement of home and society by wise methods through great personalities and with magnificent results.

THE FARM GARDEN.

READ BEFORE THE POWESHIEK COUNTY FARMERS INSTITUTE—

MRS. FRANK CRONE, DEEP RIVER, IOWA.

The garden is one of the most necessary things on the farm.

It is a good thing to have fresh vegetables for the table not to mention the financial help that accrues in their sale.

A family without a garden can trace the fact in enlarged grocery bills. A good garden will keep an ordinary family, along with a little pin money derived from the sale of eggs and butter, or cream.

Besides all that, vegetables and fresh fruits are healthful and reduce the doctor bills. Meat and canned goods are agents of the drug dispensaries, and if there were no virtue in garden truck as a food the exercise of taking care of one would find its recompense in better health.

We always have two gardens—the early and the late. Our early garden is fenced in near the house. In this "patch" we raise the early varieties, such as onions, radishes, lettuce, peas, beans, beets, Kohl rabi, cabbage, turnips, and in this garden is the strawberry bed and also the hot bed, in which we propagate our own plants, such as cabbage, tomato, pepper and sweet potato, thus saving time and expense when we are ready to transplant.

Of course, sometimes something will happen, such as last year, when my plants froze. It is absolutely necessary to have good seed. We save our own seed when we can.

For our late garden we select some spot in the corn field, where the soil is rich and fertile, and plant the seed in rows so it can be cultivated with the corn plow one way, thus saving much work with the hoe. I have also found that the vegetables grow much better than if crowded too close together. In this garden we plant all the vegetables for fall and winter. We also try to have a melon patch. But this is not very encouraging, especially when someone watches to see when the melons are ripe and invariably beats you to them. However, that does not really discourage us. We strive to raise enough for ourselves, and if some one steals a melon now and then we return thanks for those that are left.

My advice to my friends is to raise a garden. Its not only helpful, healthful and profitable, but it affords a place where the children can be taught habits of industry.

BEE CULTURE.

READ BEFORE POWESHIEK COUNTY FARMERS' INSTITUTE BY J. J. AXTELL, DEEP RIVER, IOWA.

The honey bee is, with the possible exception of the silk worm, the most important commercial insect. Although the bee is handled and cared for throughout its life by man, it can hardly be considered a domestic animal. A colony of bees in the apiary differs from a colony of wild bees in a tree only in the house they dwell in. The intelligence of a bee is not capable of culture, as one might cultivate the intelligence of a dog or a horse. Bees do wonderful things to provide for their home needs and the care of their young, but they do it all from instinct and not from education. The social habits of bees are greatly to be admired. The family, although very large, numbering many thousands, live together in the utmost harmony. The bee colony is often referred to as a "true commune," where each colony is a single family consisting of one mother and her children. Each colony will oppose to the death the intrusion of neighbors, although the neighbor may be of close blood relation, perhaps first cousins, or even full sisters that left the home but a few weeks previous to start homes of their own. So, between families, the bee is not a communist at all. There are many species of ants, which, like the honey bee, live in colonies, but in no case do those social insects permit members of other colonies to enter their homes and disturb the property there collected. It is altogether probable that the honey bee was on earth gathering nectar and pollen, and cross-fertilizing plants, and caring for its home long before the earth was in condition to be inhabited by human beings. We are also indebted to the honey bee because it stands at the head of its class, thus ranking in the insect world with man in the realm of higher animal life. The honey bee is a true insect and is built upon a very different plan from that of the higher animals with which we come in contact. Bees possess about the same organs of special sense as we find in higher animals, but these organs are built upon very different plans. That the bee can *see*, *taste*, *smell* and *feel* there can be no doubt. The bee must see and smell, or it would be impossible for it to go on its long journies in quest of proper material to convert into the honey, which most of us like so well; it must smell, in order to be able to detect the particular flower which gives the rich flavor to its product. It might be well to say that all colors in flowers, as well as all odors, are for the purpose of attracting the bee and other flower-visiting insects, which carry pollen from blossom to blossom for cross-fertilizing. The adult bee lives a few weeks only during the summer, or working months, but the late-hatched bees live much longer. There are too many phases of bee culture to take up and discuss in one short article, such as the queen bee, the honey dew, etc., which we will leave for some future time.

THE HIGH COST OF LIVING.

READ BEFORE POWESHIEK COUNTY FARMERS' INSTITUTE BY A. P. HUGHES, DEEP RIVER, IOWA.

For some time past space writers have been busy recounting the story of the high cost of living, and many and varied have been the theories advanced to account for the condition we have faced for the past year or more. It is a large problem and has engaged the attention of thoughtful men, all arriving at different solutions but none solving the problem to the satisfaction, at least, of the men who are compelled to bear the heavy burden imposed by the excessive prices charged for products which are produced right here under our very nose in profuse abundance. A "get together" movement on the part of the farmers would solve the problem to a large extent. Iowa produces hogs, cattle, sheep, dairy products, fruit, vegetables—in fact almost everything that enters into this problem. Why should the Iowa farmer produce pork and sell it in Chicago for from seven to nine dollars, (which I believe has been the range for the past year) per hundred, and then buy it back from the Chicago packer at from eighteen to twenty-eight dollars per hundred? Answer this question, and you will have taken a long step in solving the problem. What is true of hogs is true of other meat products. The cold storage barons are responsible for the high price we have been forced to pay for eggs during the past year or so, but I quite readily know that I will be stepping on the farmer's toes if I say that eggs have been out of all proportion and far above a normal price and much in excess of what the farmer would esteem a fair price. But the cold storage baron has been getting an expensive lesson lately, and we who like eggs, but have no biddies of our own, have been privileged lately to eat them minus the money taste. The meat problem could be solved by a combination among the farmers for the purpose of slaughtering the animals themselves. A number of slaughter houses scattered over Iowa would do much to put the state in the forward rank of progressive commonwealths. Canning factories could be maintained all over the state with the same beneficial result, and until the people of this great agricultural state learn to cure meat and can vegetables they will be easy marks for fattening our more progressive and far-seeing brethren of the trusts and combines.

Another reason is found in the fact that there are a billion acres of land in this country on which there is a constant loss by erosion, improper tillage, floods, storms and poor drainage—think of it, almost a billion acres in a manner non-productive. Placing the loss at $1 per acre (a very conservative estimate) a billion dollars is lost each year that could be saved if proper methods were employed, and this billion dollars must be made up from the productive acres, and of course must be added to the sum total of the product, which increases the cost when it reaches the consumer.

Again, folks are slaves to fashion, not only in clothes but in food. We are not fed according to the philosophy of what will produce the best results, but according to the dictates of appetite. We are not clothed with strict reference to comfort, common sense and economy, but according to the dictates of perverted fashion. If the people were to save only $20 per year on food and clothes it would mean that the country would benefit to the extent of one billion dollars a year, which amount has to be added to the productive acres, and is largely paid by those least able to bear the burden.

Another remedy might be found in applying business methods to the conduct of farming. A farm should be run on the same business basis as a factory. The only way to teach this is through personal contact. The national department of agriculture is lending valuable assistance along this line, and it is at present being carried on more extensively in the south than in any other section. The department has organized a department for the instruction of boys, and has an enrollment of more than forty-six thousand. It has a representative in every district and has organized girls' clubs, where the proper methods of canning farm products are taught, and boys' clubs, where advanced methods of agriculture are taught. When these boys and girls arrive and take their places among the active workers they will be equipped in a way that will stand for something practical in reducing the cost of living, and in adding to the productiveness of the soil.

If I were to say that gardens—or the lack of them—are at the very bottom of the high cost of living, I have no doubt but that you would smile and say, "that's all he knows about it." It is a fact, nevertheless. There are thousands and thousands of acres that produce nothing but noxious weeds, and almost as many thousands of idle girls and boys during the summer season that should be made to produce something. These acres and children might be producers if they were only taught to properly till a garden. There are boys and girls right here in Deep River who are confirmed nuisances all summer, idling away their precious moments, who should be producing something for the family support. Here is a source of loss, and a cause for high prices that is seldom taken into the account. These children could raise enough to support whole neighborhoods on the uncultivated acres of they were taught habits of industry and thrift. Turn the twenty-five million idle children in America into producing something from the billion idle acres and the cost of high living will disappear as if by magic.

Wastefulness on the farm and in the home is responsible for much of the high cost of living. There is waste land enough in Iowa to feed the population a whole year. This land is found in fence rows, vacant lots, barn yards twice the size they should be, highways so wide they afford a breeding place for weeds and give in return nothing of value, untilled sloughs that are non-productive, driveways and neglected corners galore all serve as reminders of shiftlessness that must be remedied sooner or later. In years of a productive fruit crop in Iowa enough fruit rots under the trees to supply every family in the state with a fair stock for the winter. Last spring I was in a potato cave in Colorado that contained potatoes enough to supply every family in Poweshiek county with ten or fifteen bushels, and at the same time potatoes were selling right here in Deep River at $1 per bushel. The same was true of other vegetables. Again, in the cities there are hundreds of people who pick their living out of the garbage barrels. Children are sent early in the morning hours to get the best of the refuse that falls from the tables of the more fortunate, and there is actual strife to see who gets the choicest of the rotten bananas and apples that are cast out. What a pity! If these people, parents and children, could be sent out of the cities onto some of the idle acres just mentioned and become self supporting and producers of something, it would be a step forward and would help to solve the problem.

It will be discovered some day that one reason for the present crisis is the desire of young men and women to get along without producing anything. The country districts has been depopulated of young men and women who would, with proper training, become good farmers and farmers' wives to go to the city to make poor clerks and poorer stenographers—endeavoring to make a living with their brains, instead of with their hands and brains properly trained to produce something useful. They produce nothing and add not a penny to the wealth of the community, yet they have to be fed and clothed by the workers at useful, productive employment. Year after year this toll of active, rugged, healthful youth has been poured into the city hopper, until the supply has exceeded the demand, and every means at hand should be resorted to to make an end of it. Wealth comes from the ground. Let our big urban population diminish and get back to the land where men, women and children can become producers of something useful, and which adds to the wealth of the state and nation, and the problem of the high cost of living will solve itself as easily as the high prices have been brought about by doing the opposite.

AGRICULTURE IN THE PUBLIC SCHOOLS.

READ BEFORE THE POWESHIEK COUNTY FARMERS' INSTITUTE—MRS. T. B. LIGHT.

To gain a correct idea of the present status of agricultural education in the public schools, a general survey of the inception and growth of the movement will be instructive, although space in this brief paper must necessarily be limited.

Public school agriculture began with the establishing of school gardens in Germany over eighty years ago, and so rapidly did the value of the movement become apparent to the educators of the continent that in less than forty years after the opening of the first school, over 100,000 such gardens were in active operation. At the present time actual gardens and practical schools of agricultural instruction are found in nearly every country in Europe,—in the colonial dependencies of England, India, Canada, New Zealand, Australia, Japan and South America,—in fact in every country that counts education one of the necessities of the people.

School gardening in Europe differs much from our ideas of the work, being much more comprehensive. For instance, several years ago, Russia reported 11,000 fruit trees, 22,000 forest trees and 1,000 hives of bees connected with her schools. And Japan solves the problem in a very practical manner by maintaining about five hundred supplementary schools, with an enrollment of 23,000 children, most of whom work on the lands of their parents, with these schools in session Sundays, evenings and even holidays to accommodate those who are unable to attend the regular sessions.

In the United States the agricultural instruction movement is only about twenty years old, although as early as 1824 its value was recognized, when it was said that "Agriculture and the gospel are the two great instruments of divine Providence to check the voluptuousness and exercise the virtues of man."

The first experimental garden in this country was planted in Boston in 1891, and for nine years was maintained as a flower garden, then kitchen vegetables were introduced. Since then the movement has spread with wonderful rapidity all over the United States, until today forty-four states are teaching this branch as part of the regular school work, fourteen states have laws requiring it to be taught in the rural schools, twelve require it in the graded schools, ten in the high schools, and eleven more are planning the passing of various needful laws on this subject.

Iowa is behind many of her neighbors in her requirements, but is planning to remedy her deficiencies by a bill which is now before the legislature, providing for the introduction of the study of agriculture in all the schools.

Our government appropriates $19,000,000 for agricultural research and development for the whole United States, while appropriating $350,000,000 for the support of the army and navy. Seventeen dollars for the support of the science of war for every dollar devoted to the industries of peace does not look like we as a nation are yet fully alive to the importance of agriculture.

Another bill before the state legislature asks for an appropriation of $100,000 for the use of the extension department at Ames, but will probably be cut down, if passed at all, as it is meeting with strong opposition from many members, many of whom favor the work, but think the appropriation too large—and yet these same members will vote $1,000,000 for the three higher educational institutions without a qualm of conscience.

In Iowa, the college extension department last year, on a state appropriation of $32,000, brought the college into touch with about 75,000 men and women, boys and girls on the farms. It conducted 22 short courses, half a dozen or more domestic schools, furnished lecturers for many farmers institutes, provided lecturers and material for special seed and dairy trains, conducted a sort of correspondence school of agriculture, organized agriculture study clubs among farmers and assisted them in their work, promoted the study of agriculture in the public schools, conducted experiment farms in a dozen or more different counties, and did various other things.

There is a general and growing demand for agricultural instruction, but even yet the demand comes more from educators, business men and others looking to the better development of our country and the proper and practical education of our people than from the farmer himself. But the day is rapidly passing when the farmer asks to be let alone, to provide for himself, maintain his home and live his life apart from the related business, educational and social world. The advancement in farm values and farm labor has made it necessary to seek solutions of problems concerning the necessity of increased profits, which solution must come by best methods of seed selection, proper cultivation, care of animals, proper and economical feeding and most profitable disposal of farm products. The gaining of agricultural knowledge, either in the home or school, opens to the student a vein of his profession hitherto almost unknown offering him a most fascinating study, an intellectual development, and a moral uplift which places agriculture in the foreground as a real basic science, and in its higher degrees of development, as an art. The question of how to introduce this subject into the schools in a practical, safe and efficient manner, and at the same time avoid interfering with the regular course of study, is a question that has engaged the most advanced and thoughtful educators of the day, and now seems in a fair way of solution. Prof. Holden says, "This work must be gradually introduced. If undertaken in all schools in an experimental way, regardless of local condition or fitness, there would be failures and these failures held up to ridicule greatly to the injury of the cause."

In eight different states agriculture is combined with the study of geography, but should go farther than geography and nature study. In the regular work in arithmetic, problems which involve the actual working out of real arithmetical questions connected with the farm and home could be given, and this work should by all means be continued when the pupil takes up the study of bookkeeping. The study of physiology and hygiene of the human body could be enlarged to include the study of the physiological construction and hygenic care of the familiar farm animals, and in the high school the study of zoology could be made just as entertaining and somewhat more practical, if the pupil learns the constructive anatomy of the cow, horse, pig, sheep or hen, as well as the chimpanzee, boa-constrictor or great auk. The analysis of the chicken can be made as instructive as that of the South American ostrich, and besides, we have the chicken. The action of heat, water and air on soil, drainage of yards, fields and roads, erosion, seepage, road-making, fence-building, irrigation, soil composition, all branches which embrace the chemistry of food. Are not these fitting introductions to the study of physics and chemistry, fascinating when properly presented, opening an inviting way to the formal study of other sciences?

What do we need to bring our schools up to the highest standard in the teaching of agriculture, in keeping with the constant improvement our educators are making in other branches? Our graded schools are constantly progressing, but what about the condition of our average rural school? Most of them are relics of what was best in the time of their organization, when they produced results to be proud of, but like the tallow dip and the ox team, they have served their purpose and must give way to something better. Twentieth century schools with eighteenth century laws do not work well together, and revision of our school laws is now imperative. This may mean some form of centralization, or consolidation, and strange to say many farmers are strongly opposed to this, although most of the opposition is based on first cost of building and establishing such a school. Statistics from the state superintendent's office show that last year there were 3,669 schools, having an average attendance of ten or less. There were 617 schools with an average of five pupils, 1,612 with an attendance of seven or less, nine with only one pupil, twenty-nine with two, and ninety-one with three. Think of the waste of money to maintain the last three named groups, amounting in all to 129 schools, and yet the report of the Iowa State Superintendent shows that in July, after all the teachers had been paid, there was still $6,000,000 of school money in the hands of somebody. The money needlessly expended on these smaller schools would support several centrally located graded schools, and with an elimination of arbitrary district lines, having the county as the unit of division, the adjusting of taxes and the expenditure of school funds in order to secure the greatest amount of benefit from the money already on hand, would be a much simpler problem. It is not necessary to dig up the farm and home by the roots and take it to the city in order that country children may have better educational advantages, but for the sake of conserving our soil fertility, for the sake of better agriculture, for the sake of a richer and fuller country life, and above all, for the sake of the boys and girls of today who are the men and women of tomorrow, let us make the best possible use of the means already at hand, and gladly welcoming any improvement, let us work hand in hand with our real educators, constantly seeking the best methods of fitting them for the active and useful life which is just before them.

THE AUTOMOBILE ON THE FARM.

READ BEFORE THE HARRISON COUNTY FARMERS' INSTITUTE BY MRS. N. G. ROGERS, LOGAN, IOWA.

Just now a great deal is being said about the great number of automobiles sold to the farmers. Richard Croker said the other day that the reason why the farmer could afford to buy automobiles was because he was not affected with the exorbitant rates for food and rent. I have an idea if Dick had to earn his livelihood on a rented farm and his living to make by the sweat of his brow as do our farmers, he would think by the time he had enough saved to buy an automobile that he had quite a "rarity." It isn't because the farmer gets things so cheaply that he is able to afford such luxuries as the automobile. When the farmer buys an auto, its because he has found it a paying investment. It saves his horses, which are high priced, saves time and labor and these are his two most valuable commodities. It affords recreation for his wife and family. Its a means of keeping the boys and girls on the farm.

Very often much time may be saved by having an automobile. For instance: Its haying time, everybody is in a hurry. The mower is broken. It may be 8 or 10 miles to town for repairs. The farm team if taken from the field could scarcely make the trip in half a day. Right here is where the auto is a great saving. The "gude wife" can lay aside her breakfast work for an hour and enjoy an hour's ride and be greatly rested for the rest of the day's work that is before her. They are in town by seven. Repairs are bought, home by eight. Soon you are in the field and cutting hay by the time the dew is off. This is what I call business with a lot of pleasure attached.

Generally in the long summer days the chores are finished an hour before dark. This is the time for the boys and girls to go for a ride. Maybe to town on some errand, sometimes to a neighbors, many times no stops are made at all. Such rides as these are the ones that bring sweet sleep and pleasant dreams to the farmers' family.

Our eastern friends are much concerned over the extravagance of the western farmer. They say automobiles cost so much to begin with, that their keep up is costly, that they are used almost altogether for pleasure and that they are afraid it will make money scarce and liable to create a financial panic. I believe that more than two-thirds of the farmers that buy automobiles have the money to pay for them. Of course there are some men who buy and pay for them because they have to, who are very slow about paying their grocery and butcher's bills. As a rule the farmer that buys a machine is able to keep one in repairs so that every time a tire pops it don't give him palpitation of the heart. I think if the "high financiers" would give more concern about the money spent for intoxicating liquors they would be doing more good. $2,500,000,000 a year are spent for liquor. What if $500,000,000 are spent for automobiles. A few men may be killed, a great number of horses frightened, a few wagons and carriages be broken up. The automobile at the worst does not wreck homes, leave children fatherless nor fill our jails with criminals and pile up our court expenses in punishing the guilty. Had not our farmers better spend their money for automobiles than throw it away in the saloons?

The farmers investment in an automobile may not always be wise and again it may be the highest wisdom. If he is able why not have his own private car and proclaim himself among the financial aristocracy of the land. He doesn't complain if the millionaire owns his private yacht or private car on the railroad stocked with liquors and other luxuries or when he loads his wife and daughter with costly jewelry. All of this does not seem to worry the eastern financiers. I consider it none of the capitalists business as long as the farmer pays for his car so that his family may enjoy the cooling breezes on a hot summer evening. It is the citizen of the city who is working on a salary little larger than living expenses who needs look out. We farmers do not buy automobiles for pleasure alone, which is all our city people can get out of a machine.

We can haul our cream, butter and eggs to town. Detach the rear seat and take a few sacks of wheat or a plow to be sharpened. Bring back a barrel of salt, a sack of sugar. Of course there are a few months in the year the farmer cannot use his auto and that is winter time.

No man, be he farmer or city resident, should go in debt for an automobile. If you haven't the money or the money directly in sight you had better stop right there and wait until you have.

I believe the average farmer works a great deal harder for what he gets than does the average city worker and because he is a farmer is no reason why he should not enjoy a pleasure he can afford especially if there can be a business help mixed in with a pleasure taking. The automobile craze was all right as long as it was in the city but now that it has spread to the country it has taken on a different light. I hardly think the farmer spending the money he has earned will cause a financial stringency.

Edison says the day is not far distant when all manner of farm labor will be done by motor power and that horses will not be used on the roads and much less on the farm. Of course time will tell all this. Perhaps some of my farmer friends might need some directions as to running their automobile, especially those who contemplate purchasing one next spring. Its an easy thing to start one but to get the thing stopped is where the amateur gets left.

There's no use to reverse the lever, yell whoa, put the stop cock on, lean back—that won't do it. You must keep your head, cultivate an air of indifference and refrain from flightfulness for you are not running an airship. Firmly, yet gently, pull the do-flicker that increases the speed back to the place where it was to begin with, put your foot on the dingfum that touches the thingumbob, press the sockdolger over the button, raise the lever of the non-composmentis until it is in line with the clodbuster, unhook the condivias until it ceases to combobolate and yank the everlasting stuffing out of the whangdoodle. This will bring the machine to a dead standstill. Profanity will imperil your standing in the church and do no good. The auto is perfectly willing to stop if approached in a spirit of amity and good will.

You know that if you are running at the rate of 60 miles an hour you cannot expect to stop at the rate of 90 miles per minute. If you do it is bound to go end over end at least three times and you will be lucky if you get out without having your hair mussed up.

Now a few words to the farmer's son who tries to run the auto with one hand and court his lady love with the other, then I am done. Do not forget the turns in the road. Don't try to put on the break with the wrong hand for if you do you are liable to run through a garden fence on to some millionaire's porch, you and your lady love going through the window and find yourselves in the parlor sitting under the what not. It requires brains to run an automobile, to stop one and court a lady while riding in one. It is far preferable that both hands be used to manipulate the machine. There is a question today in the minds of some of our most profound thinkers as to whether an auto is an improvement over a steady driving horse for joy riding or courtship. It is rare that a horse cannot be managed with one hand and the other left free for emergency, but with the auto it is different. If billy-cooing between you and your lady love be a necessity, you had better do it in the lawn swing before you start on the joy ride, and continue in the parlor after your return. The auto is not so conducive to matrimony as was the old horse and buggy or horse and sleigh. While this is an age of lightning, yet there is a limit to human celerity and the automobile on high speed is too soon for trusting abiding love to get hold and bind two hearts into one without taking resting spells occasionally. The auto is too rapid to enable love to weave its woof into the tendrils of the heart so it won't ravel.

With these directions I believe the whole family will be able to go auto riding and get home safely.

GASOLINE ENGINES AN AID TO AGRICULTURE.

(Breeders' Gazette.)

Economic necessity invented and is perfecting the gasoline engine for the service of agriculture. Remarkable has been the brief history of this practical, efficient machine. A response to an important need long felt by farmers, it has outgrown its chief original purposes, and is doing work to which its pioneer inventors probably never dreamed of devoting it. And the uses to which it may be put are not yet exhausted by the long list that stands to its credit. Every year witnesses the discovery of new "positions" for gasoline engines to fill, and strengthens their record of performance.

Man has a genius for harnessing the forces of nature and making machinery do his manual work. Watt and Franklin laid the foundation on which this dazzling age of machinery is established. Since their days the applications of steam and electricity have extended far beyond the limits of their imagination. To their simple yet profound works the gasoline engine's pedigree traces in an unbroken line, and yet it has an individuality which sharply distinguishes it from its ancestry. As the extension of an idea it is as truly wonderful as the idea itself in the mind of man.

Agriculture has been relatively slow to receive direct aid from mechanical inventions, because it is a conservative occupation in which old methods and crude appliances are continued in use through a sort of religious reverence for external inheritances. But time compels constant change in all things. As farming assumed the aspects of a science and men began to appreciate the advantages of using improved machinery, agricultural inventions increased enormously, adding effective power to the elbow in many spheres of its activity. Extensive as is the use of modern implements and tools in agriculture the field has barely been touched except in the more progressive regions. Gasoline engines could be employed with profit on thousands of farms where there is perhaps no thought of their introduction, but they are sure ultimately to "chug" their way into every niche to which they are adapted. Whenever farmers begin serioulsy to study the business side of their vocation they discover the need of economy. To save time, lessen hand labor and hasten results are of the utmost importance, and experience has shown that these ends are gained by the use of gasoline engines. One of the strongest rcommendations of this type of power is its adaptability. Another is its reliability. A third is its simplicity.

On every well-ordered farm there is a great variety of work which can be done cheaply and well with gasoline engines. Pumping water, sawing wood, churning, running feed grinders, cream separators, grindstones, bone cutters, spray pumps, fanning mills and washing machines are a few of the uses for which they are famed. In recent years another has been found which is destined to have a marked effect on the art of harvesting the small grains. Hundreds of farmers now attach four-horsepower gasoline engines to their binders, and thus save time in harvesting, and reduce the draft 30 to 50 per cent. Where four horses ordinarily are required the use of a gasoline engine will save the work of one team and insure better work by the binder. Two or three horses are easier to drive than four or five. While an engine-bearing binder with a 6½' to 7' cut can be easily drawn by two heavy horses over firm and fairly even land yielding an average crop of grain, the common practice is to use three horses. In many cases 8' binders are drawn right along by three horses or mules in heavy grain, and the territory covered in a day would be a surprise to one unfamiliar with the work of an outfit of this kind.

Several types of engines are adapted to use on any of the standard makes of self-binders. They are easily mounted or attached and weigh less than 200 pounds. Our illustration shows the position of an engine on a harvester. While the weight of the binder is increased draft is cut down by the fact that the engine does all the work of the bull wheel except support the weight of the binder. When the engine is added the binder is thrown out of gear or the drive chain removed, and gasoline furnishes the power that would otherwise be derived from the bull wheel. A chain drive gives the engine direct connection with the operating parts of its host. All the bull wheel has to do is to turn when the horses walk; it has nothing to do with the sickle, reel, elevator and packers; the engine keeps these going.

Quite often at harvest time the ground is wet, so that the bull wheel supplying power to the harvester mechanism clogs, slips and patches of grain are lost. Whenever this giant wheel gets its claws full of mud on slippery footing it slides, especially if the grain be heavy. It is in such cases that gas power gives a fine demonstration of its value. If the ground will bear the weight of the horses without miring them an engine-bearing binder, taking an 8' swath, will go through, no matter how heavy the straw, and save every head of standing grain. Wet fields and springy spots need not be avoided when the crop is ready to cut, provided the binder can be driven over them. Many a farmer has saved enough grain on such areas to pay for his engine the first year in use.

When grain is ready to cut it should be got into the sheaf with the greatest possible despatch. With an engine-driven binder cutting a wide swath the length of time required for the work is reduced 10 to 25 per cent. and a clean job is done. Altogether the economies which can be effected by applying gas power to binders are so important in business farming that every grain-grower could well afford to invest in an outfit. After finishing the harvest, the engine could be removed and put to work elsewhere. Its ride would not make it lazy. There is more useful service in a first-class gasoline engine than in any other machine used on a farm.

No machine is fool-proof. A gasoline engine cannot be expected to give as satisfactory results in the hands of a reckless man as under the management of someone possessing a mechanical instinct. Some men dislike machinery and cannot secure the best results from its use; others take a special pride in it, and so secure maximum returns. As between the man who is inclined to "monkey" with a gasoline engine whenever he has nothing else to do and the man who lets it alone until it is unmistakably "out of fix" the latter is to be preferred. It does not require an expert knowledge of its construction and operation successfully to run an engine, but the man who would get the longest and most efficient service out of it should know a great deal about the principles involved. First of all he should seek to make himself master of at least four features of the art of gas engine management. These are compression, ignition, carburetion and proper valve action. Most of the trouble experienced by users of this form of power result from ignorance or neglect of the conditions embraced in this list. Ignitors are the most fruitful source of difficulty. But nothing happens which cannot be remedied or at least understood by the man who has common sense and patience.

Many farmers have a well-earned reputation for taking very shabby care of their agricultural machinery. Such men are sure to have trouble with gasoline engines. Dirt, rust, violent jarring and general abuse will soon tell on the best that can be built. Inferior oil also contributes to an abbreviated service and various defects. Manufacturers take pains to build reliable engines that if properly cared for and intelligently operated can be depended on for years of profitable service; but they do not guarantee them against abuse of any sort. Many a machine is condemned for defects which it develops under the blind eye of an owner who does not know how to use it. He blames it for his own shortcomings. Usually he makes matters worse when he tries to correct them. Careless, irresponsible farm hands who enjoy accidental leisure and a run to town for repairs should not be allowed to operate gasoline engines. While these machines require but slight attention, so far as the bulk of their work is concerned, they should have intelligent inspection at intervals.

D.C.W.

KEEPING IN THE LEAD WITH DRAFT HORSES.

(BREEDERS' GAZETTE.)

Whether prices are high or low, there are forces always at work to counteract the benefits which accrue to the average quality of horses through the progressive policy of a portion of the farmers who raise draft colts. It takes considerable tenacity of purpose and a farsighted business policy to keep some farmers rigidly in line for improvement in the stock of horses with each succeeding generation. Every lapse of confidence either in his own ability as a breeder or in the continuity of the market subjects a man to the temptation to sacrifice valuable breeding stock. One may trust the unprejudiced appraisal of the market to show more accurately than his own possibly biased judgment whether he is breeding the kind of horses most wanted. He can trust to the matchless ability of draft horses to handle wagons and farm implements in all sorts of difficult situations to maintain a demand for work stock.

When horses are high and again when they are low in price many good mares are thrown on the market by farmers. When horses are high-priced some men are afraid to invest in a good mare for fear that she may depreciate in cash value while paying for herself in colts. They content themselves with cheap mares because while horses are at the high spot any kind of scrub colt from such stock will bring some kind of a remunerative price. They sell the best they have and keep the plugs because they argue that the good ones are worth too much for a common farmer to own. Back in the nineties, when the financial depression knocked the bottom out of the horse market along with everything else, farmers of this habit of thought sold the best mares they had, because they were the only ones that would bring a decent price, and kept their trash for foundation stock to breed from when prices should improve.

The advancement in the quality of grade horses in this country has been made by farmers who figured such situations out quite differently. When horses bring high prices, as they have of late years, they have found that the real good ones reaching the market seem to be particularly scarce. The same flourishing business conditions that make a great demand for horses, inspire a desire on the part of large firms to make such an impressive display of their teams as calls for the very best horses. Also, the more urgent the rush of traffic, the greater is the appreciation of extreme size in draft horses. When the margin between a 1500-pound gelding and one of 1800 pounds of equal excellence is measured by the margin between $200 and $300, which is about the condition at present, it does not really take much deftness at figures to ascertain that the big one makes more profit. When horses were low in price 15 years ago, these same farmers figured it out that they could afford to own good mares when they cost only a moderate sum. They weeded out their poorest stock at whatever it would bring, and consequently they had a creditable foundation and a little surplus stock already on hand when in due time the market recuperated.

It really does not require a great outlay of capital to keep a farm stocked with high-class draft work mares, provided no temporary fit of discouragement is allowed to prompt their displacement with a lot of disreputable scrubs. The initial outlay for good mares is soon returned in the extra prices which their colts bring. Then it is merely a matter of hanging on to the right type through thick and thin. There is no extra cost for that. A man has no right to charge a good big filly with the price she might bring if sold, when in reality the cost of her dam has been recovered by the sale of geldings and the filly in question cost no more to raise than a cheap one. High-class draft horses can be had on the farm at low cost if they are bred on the spot from generation to generation. In a few years the cost of foundation stock is entirely forgotten in the satisfaction and profit derived from the offspring.

THE CARE OF THE COLT ON THE FARM.

(Breeders' Gazette.)

The foal is an important figure on the farm. No other youngster in barn or paddock attracts such attention. The arrival of the lank awkward foal as a member of the farm's great live stock family is a momentous occasion. There is something about the proud bearing of the ungainly little fellow that commands human interest. He is at once monarch of all he surveys. The devoted homage of his affectionate dam scarcely exceeds the constant admiration showered upon him by every person on the farm. Men and women join an enthusiastic interest in the horses more completely than in any other kind of stock. The foal gets the lion's share of it. Every trait is keenly discerned and compared with those of dam and sire; the monthly gain in weight is a matter of family pride, and every new antic is joyfully applauded.

The foal is fortunate, and so is his owner, if the early enthusiasm is never allowed to wane and if a horseman's skill and judgment are exercised therewith. Foals do not feed and thrive on kind thoughts and caresses alone. At the beginning the tall bony frame is none too strongly linked to life. The well meant care which leads to the conscientious stabling of the mare at foaling time subjects the foal to the danger of navel infection. Even after it is some days old, the destructive germs lurking on filthy stable floors may gain entrance to the system when the innocent youngster is stretched out to rest and grow. Stables where young foals are kept must be scrupulously clean and frequently disinfected. It has been argued by some veterinarians that infection may enter the system through the soft soles of the feet as well as through the navel, but the raw surface of the severed navel cord is the most vulnerable point of attack. Whether the foal is born in a stable or on the clean green carpet of the pasture, the stump of the cord should be covered with a disinfectant at least twice a day until it heals.

During the first year of its life the foal's existence is one steady round of taking nourishment, exercise and rest. Great growth results if these three conditions of life are properly fulfilled and balanced. A strong digestion is a mighty important thing for the foal. The tender internal organs that handle the milk, and later the grain and grass, from which his body is built up, must be trained properly to perform their duties. Watchfulness of this important piece of mechanism must begin the first day of the foal's life. Perhaps he may need a little castor oil at first, and later on he may need the supply of milk temporarily reduced and perhaps a little boiled milk given from a bottle to correct the laxative effects of too much milk or milk of bad quality. Since the foal is fed by the mare, her feed must be intelligently chosen. If she is given too much rich feed, or turned too suddenly to pasture, or brought in very hot and tired from work to her hungry foal, trouble is sure to follow. An evenly regulated supply of milk of uniform quality is needed by the foal, and the way to secure that is to regulate the feed of the mare to her evident needs, avoiding sudden changes of any kind and shielding her from the most exhaustive work.

There is no set rule for raising foals successfully, even when they must be raised by hand. Different circumstances frequently call for quite various treatment. If the foal is comfortably sheltered while the nights are cool, and is protected from chilly rains, and is not allowed to wear himself out following the mare in the field, he should thrive if the feed is right. If there is no apparent digestive disturbance, and he keeps thin and lank, the probability is that he does not get milk enough. In such a case the mare needs more oats, bran, clover hay and pasture, with possibly a pound of oilmeal a day, and less of corn and timothy hay and hard work. Corn and timothy do not furnish in suitable amounts the ingredients for making milk and hard work cuts down the milk-flow of some mares. If a foal must be raised by hand, the cow's milk must be sweetened a little and thinned somewhat with limewater. Then it must be fed warm, in small quantities and often. Splendid foals have been raised in this way. Sometimes it happens that a mare gives only half or two-thirds as much milk as is needed, and if the foal can be induced to take a couple of feeds a day from the bottle or bucket, its growth and health may be greatly advanced. Few foals get too much feed. Occasionally a mare may give too much milk at first when fed heavily on rich feeds, but a reduction of the milk making factors of the ration will speedily correct that. Often the foal could use more feed than the mare furnishes even before it is old enough to nibble at grain, hay and grass. It should be encouraged to eat as soon and as much as it desires. The youngster will not eat much before it is a month old. It will take an interest in the grain in the mare's feedbox while she is eating before any notice will be taken of grain anywhere else. Then is the time to put up a low feedbox just out of her reach and give the foal grain regularly. Crushed oats and bran make a good feed to begin with, and probably nothing is better at any time during the first summer and fall.

The foal must be encouraged to eat heartily, and to exercise, rest and grow. If the mare is running in the pasture the exercise and rest may be naturally well regulated. If she works in the field, the foal must be kept in the barn or turned in a pasture to prevent its attempting to duplicate every mile of travel taken by the mare. The foal cannot do such work as that and also grow as it should. If allowed to follow doggedly along up one row and down the next all day, its drooping head, lagging footsteps and skinny frame make a miniature lifeless plug out of what should be a plump, playful, vigorous foal. Thousands of foals are stunted by insufficient feed; other thousands are stunted by hard work during the first three months of their lives.

The demand upon the foal's digestive system for nourishment is very great. Draft foals especially must be well fed. During the first twelve months of its life the foal makes about as much growth as it does in the next three years. During the first year the foal makes a pound of growth with less feed than at any subsequent time but it cannot handle nearly so large a bulk of feed in its small body. The folly of withholding grain from the foal either before or after weaning should therefore be apparent. If the aim was to produce a horse that could exist on scanty nourishment and endure hardships on coarse feed, it might be wise to subject the growing colt to the meager supply furnished by withered pastures, strawstacks and stalkfields. But horses are used these days not to do battle with the vicissitudes of weather and season, but to turn feed into power. The work horse must live largely on grain and nutritious hay; the colt should become accustomed from the first to digest and assimilate the same sort of feed. Not only that, but he must have such feed if he is to grow. If the foal is forced to eke out a mere existence, its time of greatest possibilities for growth is wasted. The stunted frame of the yearling will never expand properly by any system of later feeding. The way to make big colts is to feed well from the start.

Draft foals that are doing well gain three to four pounds a day up to weaning time, which is usually at about five months. Last year reports of weights and gains of foals were sent in by a number of breeders. The foals were mostly sired by ton stallions and from mares weighing about 1,700 pounds. At one month old the average weight of the foals was 345 pounds. During the second month they gained an average of 4 pounds a day; the third and fourth months, 3:5 pounds daily; the fifth month, 2.8 pounds, and the sixth month, the gain was 2.3 pounds. The average weight of the foals at six months was 830 pounds. The lightest weight reported at that age was 726 pounds and the heaviest 940. At 12 months old the average weight was 1,170 pounds; at 18 months, 1,445 and at 24 months old, 1,590 pounds. As these averages are made from records of 35 colts, they may be accepted as fairly reliable, especially as there was comparatively little variation in the rate of growth of the different colts.

After a spring foal is well started and has settled down to a steady routine of feeding and growth, the principal obstacle encountered the first season is blood-thirsty flies. Even before harvest-time flies usually get so numerous and persistent in their attacks that the tender-skinned foal suffers greatly. Probably the best protection is a cool, dark stable in which the foal may be comparatively comfortable and safe from attack during the day. There he can stretch out on the straw and rest in content. At night the mare and foal may be turned to pasture. Even if the mare and foal are to be left at pasture all the time, they should be seen every day so that any accident may be speedily remedied. The young feet should be watched and rasped level if the natural wear does not keep them so. The toes frequently grow too long, and this ruins the shape and position of the bones of the pastern as well as inducing low heels. The toes should be kept reasonably short.

The occasional handling that a foal must have in the process of ordinary attention to its needs gradually accustoms it to the hand of man. One of the first things that it should learn is that a man is its master and friend. The foal that is early fitted with a halter and taught to walk along willingly beside its leader, to stand squarely and still to be photographed or admired, to mind simple commands when they are given, to eat out of the hand, to appreciate a caress, is learning the great lesson that man is a trustworthy companion. Horses are naturally intelligent, and it pays to begin while they are young to teach the fundamental principles on which their usefulness depends.

E. T. R.

TESTING FARM SEEDS IN THE HOME AND IN THE RURAL SCHOOL.

INTRODUCTION.

Progressive farmers who recognize the importance of better and more profitable crop production are becoming convinced that the quality of the seed used is worthy of careful attention.

The results of seed tests made at the Department of Agriculture and at the state experiment stations show that certain kinds of farm seeds in which there is an active trade and a strong competition are often seriously adulterated, the effect being that the farmer buying such seed gains a disappointing experience instead of a satisfactory crop. Again, the seed of certain farm crops is often mixed with seed of especially noxious weeds, necessitating labor and expense in preventing permanent injury to the farm. Seed may have a low germinating power due to age or to unfavorable conditions of development or of harvesting. Seed of clovers and of alfalfa found on the market sometimes comes from foreign regions possessing a less rigorous climate than that under which the seed would be grown in this country. For this reason such seed is undesirable. These results of tests made in the laboratory are fully corroborated by the experiences of farmers engaged in growing crops.

The popular agitation within recent years in the interest of better seed has brought about some change in trade conditions, but much room for improvement still remains. While a few states now have laws pertaining to poor seed, there is no federal law preventing the importation of poor seed or its distribution by interstate traffic. In consequence of this, protection in seed buying is very largely a matter of business acumen on the part of the individual purchaser, which becomes very important when the purchaser is also the consumer.

In the matter of seed buying the best protection to the purchaser is believed to be self-protection based on the ability to judge the quality of the seed offered. This belief is supported by the fact that it is both possible and practicable for buyers or consumers of seeds to determine very accurately their quality.

The purpose of this bulletin is to encourage seed testing in the farm home and in the rural school by explaining the essential features of seed testing as it relates to farm seeds and by showing how satisfactory tests can be made by simple means. The expense involved is slight and, considering the little effort and time required, is thoroughly justified by the practical information to be gained. The writer's observation of the readiness with which beginners have qualified themselves for making such tests under instruction scarcely more favorable than that offered here, satisfies him of the absence of any valid reason why farmers should not protect themselves from the use of poor seed.

An important advantage of making tests at home is that the time required to get a report on a sample of seed sent to Washington or to an experiment station for test is saved. This obstacle removed, a practical examination or test will often be made, when if the seed must be sent away it will be bought untested. Furthermore, a purchaser's order from sample is much more likely to be filled from the seed actually represented by the sample if the delay in sending away for a test report is avoided.

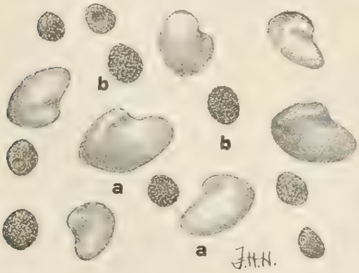


Fig. 1.—Seeds of clover dodder (**b**) and red clover (**a**), showing relative sizes. (Enlarged.)

Seed testing is admirably adapted for practical exercise work in rural schools giving instruction in elementary agriculture. It is easily carried on at any season of the year and requires but little outlay for apparatus or working material. If tests are made of seed of interest at the time in the homes of the pupils, the results may be very practical service. A study of farm seeds and their impurities tends to interest pupils in crops and weeds and in their interrelation on the farm.

SEED TRADE CONDITIONS—GENERAL STATEMENT.

Most of the undesirable conditions exhibited by seed which make seed testing necessary are the result of trade influences. The responsibility for these conditions doubtless rests fully as much with the mass of consumers who demand low-priced seed as with the dealers who cater to this demand. The trade has employed various means to meet the demand for low-priced seed. Large importations are made of the same kinds of seed which are produced in and are exported from this country. The imported seed can be sold cheaper than that which is exported. Grades of seed which are practically unsalable in Europe find a ready market here because the better American-grown seed is commonly considered too high priced. Various forms of seed adulteration have long been practiced and seed ill adapted to our climatic conditions has often been sold. The results have been frequent failure of crops, an excessive cost of the actually good seed, and a wider distribution of many kinds of foreign weeds than by any other means. A general understanding of these conditions as they relate to particular kinds of seeds is helpful in making tests.

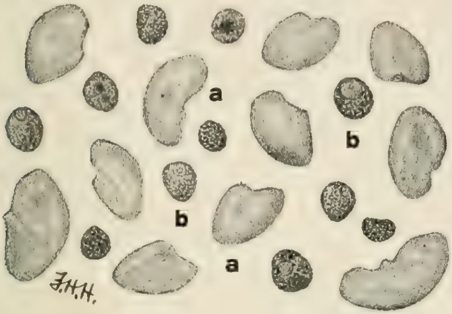


Fig. 2.—Seeds of clover dodder (**b**) and alfalfa (**a**), showing relative sizes. (Enlarged.)

APPLICATION TO KINDS OF SEEDS.

Red Clover and Alfalfa—Seed of both red clover and alfalfa is imported, chiefly from Europe, in large quantities annually, and much of it is low in quality. Such low-grade seed is usually very weedy. The imported red clover seed is often a grade of small-seeded screenings which carries a class of weed seeds rarely found in a large-seeded grade of clover seed. Such low-grade seed carries seed of clover dodder in nearly every instance, while American-grown clover seed practically never carries this kind of dodder seed. Shriveled alfalfa-seed screenings containing very little, if any, good seed, are sometimes imported. Such material can serve only as an adulterant.

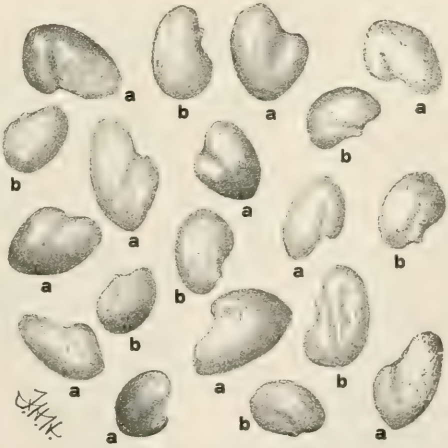


Fig. 3.—Mixture of seeds of red clover (**a**) and yellow trefoil (**b**). The clover seeds are more or less triangular, those of trefoil oval, and usually with a distinct projection beside the scar notch. (Enlarged.)

Cheap imported alfalfa seed usually carries clover dodder while American seed is free from it. Again, buckhorn, wild carrot, and wild chicory seeds are nearly always found in the cheap alfalfa seed from Europe, while they do not appear in most lots of American seed. Both red clover seed and alfalfa seed are subject to adulteration with yellow trefoil seed. Alfalfa seed, furthermore, is adulterated with sweet clover seed and with seed of the bur clovers. Seed of red clover, alfalfa, and crimson clover from the warmer parts of Europe is from a tenderer strain of plants than is demanded in most parts of this country. Experiments have shown that, as a rule, such seed can not compete in crop production with domestic seed.

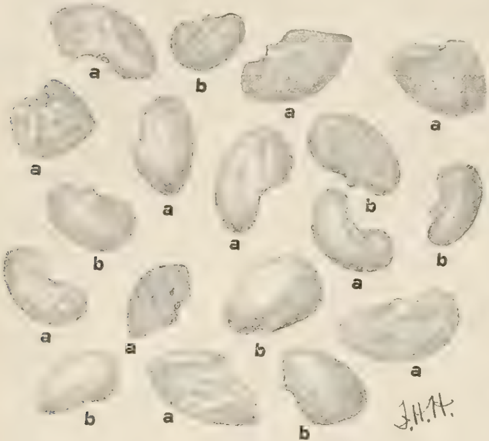


Fig. 4.—Mixture of seeds of alfalfa (**a**) and yellow trefoil (**b**). Alfalfa seeds are more or less kidney-shaped or angular, while those of trefoil are more uniformly oval and have the small projection at the scar more commonly evident. (Enlarged.)

Considerable red clover seed has been imported from Chile within recent years. This seed is the best appearing clover seed in our market, and authentic reports show that it has proved productive in various localities extending from Canada nearly to the Gulf states. Nearly every lot of this seed that has come under our observation, however, has been badly infested with an unusually destructive strain of field dodder seed.

Alsike Clover—Seed of alsike clover is produced in the Northern states, but much of that in the market is imported from Canada. Very little is imported from Europe. Canadian seed, and doubtless some of that produced in the United States, often contains much Canada thistle seed—more, indeed, than is found in any other kind of farm seed. Yellow trefoil seed commonly appears in alsike seed, sometimes to the extent of severe adulteration. Low-grade, weedy, and shriveled

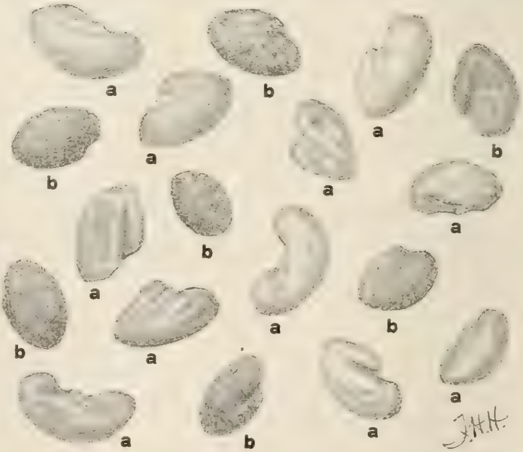


Fig. 5.—Mixture of seeds of alfalfa (**a**) and sweet clover (**b**). The elliptical form of the sweet clover seeds, which have the scar notch near one end, together with their uneven surfaces, serves to distinguish them from the more nearly kidney-shaped and smoother alfalfa seeds. (Enlarged.)

screenings are sometimes used as an adulterant. Several of the commoner kinds of weed seeds found in alsike clover seed are very detrimental. Some lots of alsike seed consists largely of timothy, which amounts to an adulterant if the mixture is sold at the price of pure alsike seed. This mixture is poor seed to sow if alsike seed production is contemplated; the two crops ripen together and their seed can not be wholly separated.

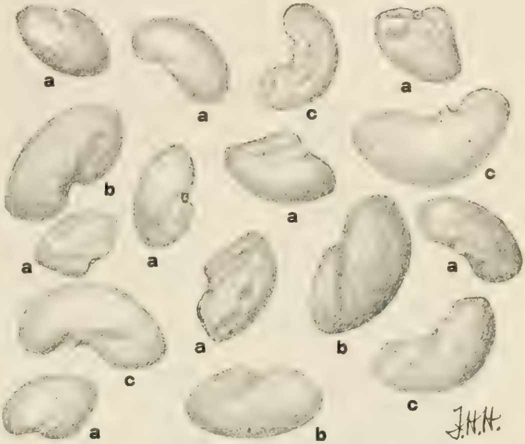


Fig. 6.—Mixture of seeds of alfalfa (**a**), toothed bur clover (**b**), and spotted bur clover (**c**). Note the larger size of the bur clover seeds, also the kidney shape of the spotted bur clover seeds, which have the scar near the smaller end. (Enlarged.)

Old stocks of seed of the clovers and of alfalfa having low vitality are often mixed with new seed. Such seed is sometimes oiled and rubbed to give it the appearance of freshness.

Grass Seeds—The seeds of grasses are subject to various conditions tending to reduce their quality. Adulteration with old seed or chaff of the same kind or with the very similar appearing seeds of other kinds is often practiced and readily escapes detection by both retail dealers and consumers. Accidental misbranding of grass seed in the trade is doubtless not uncommon.

Kentucky bluegrass seed is often adulterated with the similar Canada bluegrass or seed of the latter is substituted for the former. Again, Kentucky bluegrass seed often has low germinating power, owing to improper methods employed in curing and it is commonly very chaffy.

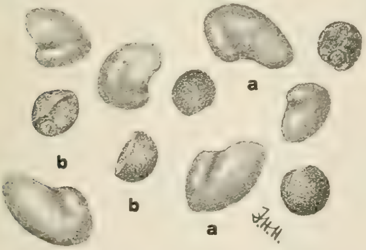


Fig. 7.—Seeds of field dodder (**b**) and red clover (**a**), showing relative sizes. (Enlarged.)

Orchard grass seed is adulterated with seed of meadow fescue, English rye-grass, or with both.

Seed of meadow fescue, or English bluegrass, is adulterated with seed of the perennial, or English, ryegress and with orchard grass chaff.

Awnless (or Hungarian) brome-grass (*Bromus inermis*) seed is adulterated with meadow fescue and English rye-grass seeds and with chess, or cheat. The latter has even passed in the trade as Hungarian brome seed.

Redtop seed appears in the market in three grades, "recleaned" (or "solid"), "unhulled," and "chaff" redtop. The latter is very misleading, since it sometimes contains practically no good seed. The recleaned grade sometimes contains considerable timothy, which is inexcusable unless sold as mixed redtop and timothy.

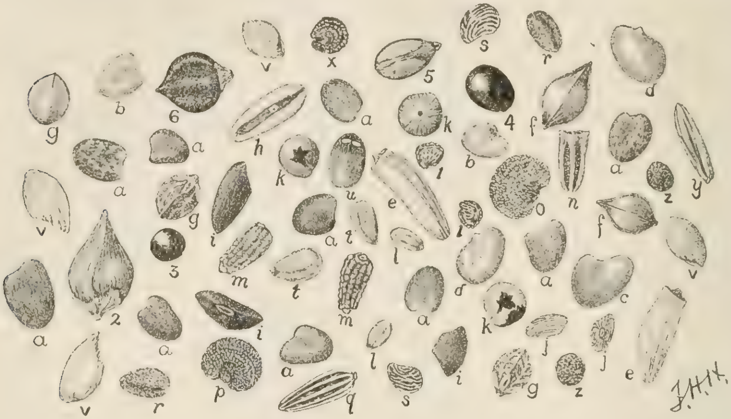


Fig. 8.—Mixture of weed seeds commonly found in low-grade alsike clover seed; **a**, Alsike clover; **b**, white clover; **c**, red clover; **d**, yellow trefoil; **e**, Canada thistle; **f**, dock; **g**, sorrel; **h**, buckhorn; **i**, rat-tail plantain; **k**, lamb's-quarters; **l**, shepherd's purse; **m**, mayweed; **n**, scentless camomile; **o**, white campion; **p**, night-flowering catchfly; **q**, oxeye daisy; **r**, small-fruited false flax; **s**, cinquefoil; **t**, two kinds of peppergrass; **u**, catmint; **v**, timothy; **x**, chick-weed; **y**, Canada bluegrass; **z**, clover dodder; **1**, mouse-ear chickweed; **2**, knot-grass; **3**, tumbling amaranth; **4**, rough amaranth; **5**, healall; **6**, lady's-thumb. (Enlarged.)

Rape, Vetch and Flax—Winter rape seed is liable to contain seed of the summer rape (bird rape), an annual variety of rape not adapted to the forage purposes of the winter rape. Seed of either winter rape or summer rape may contain the seed of various wild mustards, especially that of English mustard, or wild charlock.

Winter (or hairy) vetch seed often contains seed of various varieties of spring vetch, from which it should be free.

Considerable flax seed is imported from Russia mixed with many impurities, including seed of the flax dodder, a kind of dodder particularly destructive to flax. Seed from certain regions of production in this country is free from this dodder, false flax seed, and other impurities.

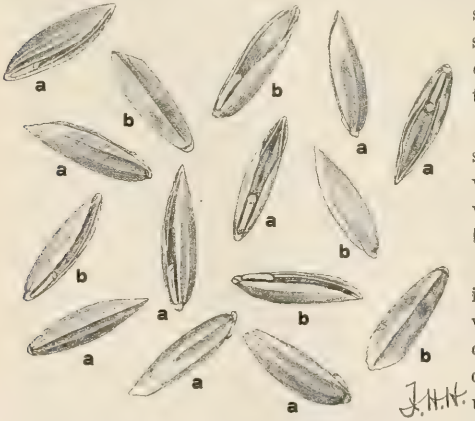


Fig. 9.—Mixture of seeds of Kentucky bluegrass (**a**) and Canada bluegrass (**b**). The Kentucky bluegrass seeds are broadest at the center, pointed, and have a distinct ridge on each side. Canada bluegrass seeds are mostly broadest near one end, blunt, and smooth on the sides. (Enlarged.)

APPRECIATION OF GOOD SEED NECESSARY.

These and other conditions of the seed trade operating against the use of the best seed have long prevailed in this country. They are likely to continue, largely irrespective of laws to the contrary, until consumers generally come to appreciate and accept only good seed. Consumers will need to know good seed from poor and to understand that the legitimate price of good seed is actually lower than the corresponding price of poor seed which costs relatively more to market, authough the original cost to the dealer may be lower than that of high-grade seed.

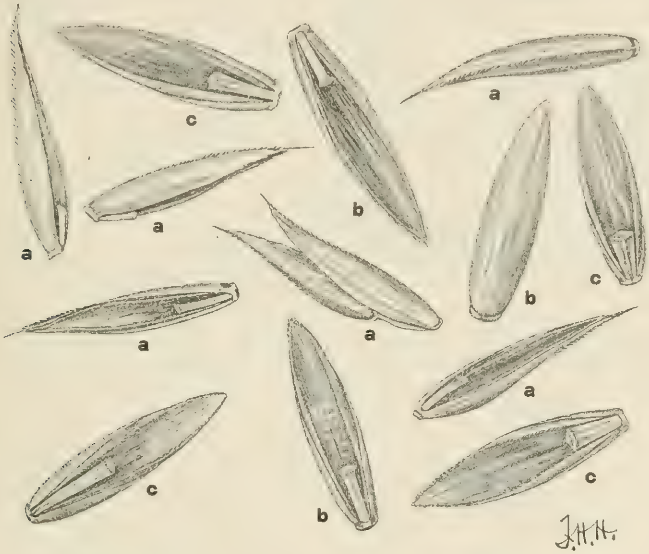


Fig. 10.—Mixture of seeds of orchard grass (**a**), meadow fescue (**b**), and English rye-grass (**c**). The orchard grass seeds are distinguished from the others by their slender, curved form. The meadow fescue and rye-grass seeds are distinguished by the differnce in the section of the seed-cluster axis (rachilla segment) which each bears. (Enlarged.)

PURPOSE OF SEED TESTS.

The purpose of making tests of farm seed is to detect the undesirable conditions affecting the seed which have been referred to in preceding paragraphs. Such tests should be made early enough in the season to allow ample time to obtain other samples or to buy additional seed if the tests lead merely to providing for foreign matter by sowing a larger quantity of seed.

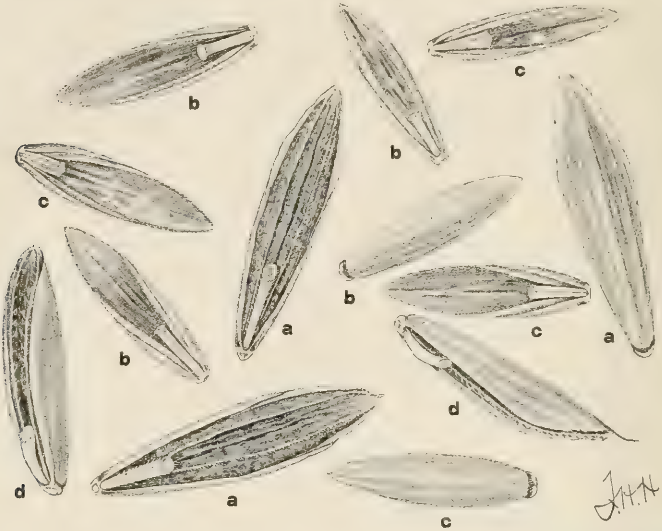


Fig. 11.—Mixture of seeds of awnless brome-grass (**a**), meadow fescue (**b**), English rye-grass (**c**), and chess, or cheat (**d**). The brome-grass seeds are distinguished by their greater length and flattened form. The seeds of chess (**d**) are somewhat cylindrical, due to being folded lengthwise. They are thus thicker than the awnless brome-grass seed and sometimes are awned. (Enlarged.)

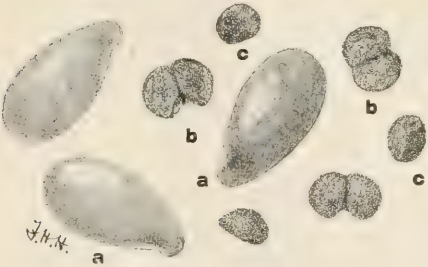


Fig. 12.—Seeds of flax dodder (**b** double, **c** single) and of flax (**a**), showing relative sizes. (Enlarged.)

The seed of most of the farm crops can be recognized with certainty under careful examination as to its particular kind. Seed of different varieties of a kind as a rule can not be distinguished in this way. For example, red clover seed can be distinguished from other seeds, but the medium and mammoth varieties of red clover can not be distinguished by their seeds. Seeds of varieties of individual kinds of plants usually must be grown to insure varietal determination. This is not a part of the usual seed test.

The first object of the test, excepting with respect to varieties, is to find out if the seed is true to name.

The seed of certain farm crops is rarely free from all impurities. Miscellaneous impurities may appear or some one kind of foreign seed may be present as an adulterant. Old seed of the same kind as the crop seed may constitute an adulterant, a fact which becomes apparent in the germination test.

A second object of the test is to show if the seed has been intentionally adulterated.

The miscellaneous impurities of seeds are classified (1) as inert material incapable of growing, and (2) as foreign seed which may be capable of growing and producing plants.

A third object of the test is to show the relative proportions of comparatively harmless inert material and of possibly noxious foreign seed in the sample.

The foreign seeds in a sample, consisting usually of various kinds of weed seeds, may not amount to much in quantity, but their noxious character may make them very important.

A fourth object of the test is to disclose the presence of especially noxious weed seeds, as dodder, dock, thistle, etc.

A fifth object of the test of seeds in which the region of production is a matter of importance is to show, if possible, by the nature of its impurities, the probable source of the seed or to show if it is a mixture of domestic and foreign-grown seed.

A sixth object is found in the germination test, showing how much of the seed is capable of growing under favorable conditions. The energy with which the seed sprouts is to be considered. With new clover and alfalfa seed the amount of "hard seed," or seed which absorbs moisture slowly and therefore sprouts tardily, is to be noted and allowed for in using the seed.

The objects thus enumerated relate particularly to the seed of miscellaneous forage crops. Interest in the seed of the cereals and corn centers chiefly in the germination test with respect to the extent and character of the sprouting.

SEEDS ESPECIALLY NEEDING TO BE TESTED.

While all kinds of farm seeds may be subjected to a test of one kind or another, the seeds of the crops in most general use and which it is especially desirable to have tested represent the true clovers (as red, alsike, and crimson), alfalfa, certain grasses (as timothy, orchard grass, fescue grass, bluegrass, brome-grass, and the millets), cereals rape, flax, vech, and corn. The reason for this selection is that much of the seed of the crops enumerated, except cereals and corn, is imported, and widely variable grades are on the market. The magnitude of the trade in this class of seeds shows that the majority of farmers do not depend on domestic production for the seed they use. It is probable that the prevalence of foreign-grown seed in the market is not generally recognized by farmers in localities where locally grown seed is ordinarily used.

EASE OF MAKING PRACTICAL TESTS.

Seed tests sufficiently accurate to answer all practical purposes can be made by a beginner with a little practice. Certain time-consuming and exacting features of detail in making official tests at Washington or at an experiment station are often unnecessary in making tests for the facts of most practical importance.

By providing the apparatus and following the directions for making tests suggested in the following pages and by using the illustrations in comparing seeds of different kinds one can soon become sufficiently expert to feel reasonable confidence in his ability to avoid errors of importance.

The younger members of the home circle should find such work comparatively easy to accomplish and interesting as well. The testing of locally grown seed would be assisted by the possession of a correctly named set of the seeds of crops and of weeds prevailing in the vicinity.

When the work is done in the school, samples of seed of local interest and obtainable at the homes of the pupils may be used. This tends to impress the pupils (and their parents as well) with the immediate utility of the work. If suitable seed is not obtainable locally, samples representing different grades can be obtained from dealers. The boys can make the balance here described. Several balances may be made and their efficiency compared. The successful making of such apparatus has a distinct educational value of its own. One pupil may be authorized to procure the magnifiers required; another may be delegated to provide one or more plate germinators or to make the corn-germinating box. Germination tests made in cloth, paper, sand, and soil may be compared, showing the effect of surrounding conditions. Such actual practice makes the pupil do and think and fits him to master corresponding but more complex problems later.

APPARATUS USED IN MAKING TESTS.

The Need of Apparatus—Only such apparatus is needed in making practical seed tests as enables one to use a weighed quantity of seed from the sample, to separate the pure seed from the foreign seeds and other impurities, to distinguish the character of the foreign seeds, and to make the germination test.

It is important to use a weighed quantity of seed in the test, because only in this way can one determine the relative quantity or percentage of pure seed as compared with the quantity of the impurities. This requires a balance sufficiently sensitive to be moved by a small weight, such as that of a few clover seeds. The sensitiveness is necessary, because only a small sample of seed can be used in the test. A large sample would require too much time and labor. For this reason only small samples are used in making official tests of seeds.

The absence heretofore of a readily available, effective balance suited to this work, doubtless has been the chief bar to the popularizing of farm and rural-school seet testing. Expensive chemical balances are used in making official tests, and the cheaper balances on the market cost from $10 to $35—an expense beyond the reach of the mass of consumers who should profit by practical seed tests.

The Balance—A simple, efficient balance can be made by any boy or girl at all familiar with the use of a few common tools.

The balance consists of a hexagonal, or six-sided, pencil notched as nearly as possible in the center and half way through the lead. Make a rather wide V-shaped notch. Half of a similar pencil is notched likewise at its center, care being taken that the angle at the apex or "bottom" of the notch is made narrow, straight, and smooth. At this point the bal-

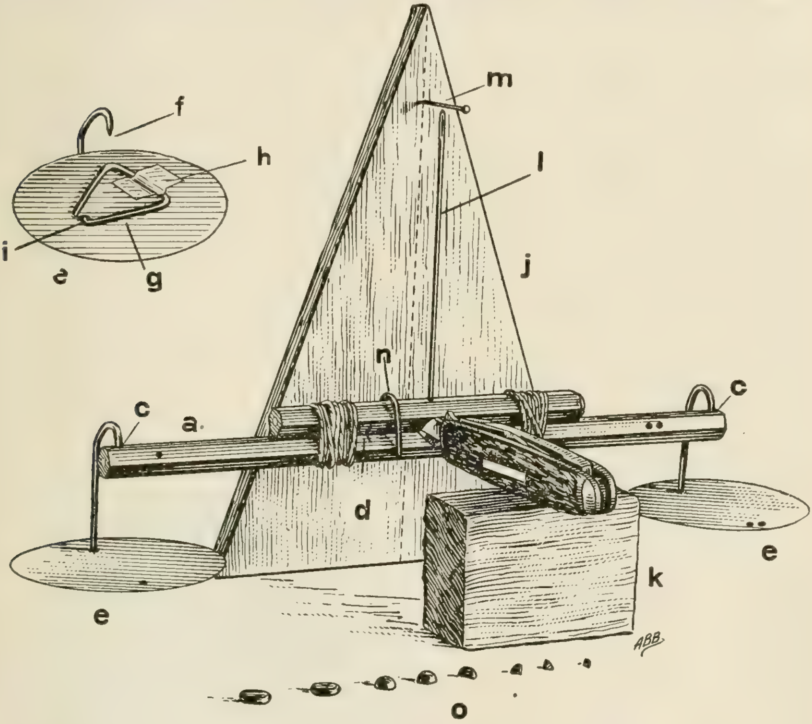


Fig. 13.—A simple balance used in making the purity test of seeds; **a,** Six-sided pencil, full length, and a half-length pencil bound to the long pencil by rubber bands; **c,** shallow holes near the ends of the long pencil; **d,** reference mark common to both pencils at a convenient point on the line where they meet; **e,** trays for holding the seed and the weights, the upper one showing the under side; **f,** bluntly pointed end of the wire adapted to fit loosely in one of the holes **(c)**;**g,** wire bent beneath the tray to hold it in position; **h,** piece of gummed paperholling the wire to the tray; **1,** hole at proper distance from the center of the tray where the wire pierces it; **j,** thin piece of board holding the parts of the balance in position; **k,** the block of wood holding the knife handle at proper level; **l,** darning needle serving as a pointer as the pencils oscillate in weighing; **m,** pin marking the position of the head of the needle when the trays are properly balanced before and at the close of weighing; **n,** "rider," or wire staple, so placed as to balance the trays when empty; **o,** series of selected BB shots used as weights; whole ones are flattened to prevent rolling; others are cut into halves, quarters, eighths, and sixteenths, and selected with reference to the equality of their weights.

ance rests on the small blade of a knife. The blade must not bind and the pencils must swing on its edge with the least possible friction. The two pencils are firmly rubber banded together, so that the two notches form an opening nearly square between the pencils. Near each end of the long pencil and on its notched side make a shallow hole by boring into the wood with a hard pencil having a smooth, slightly blunt point. In order that the balance may operate properly the apex of the notch in the short pencil—that is, the point which rests on the knife-edge—must be exactly midway between the holes in the ends of the long pencil. Slide the short pencil along the other till it is in proper position, then with the point of the knife-blade cut a mark common to both pencils on the line where they touch. The rubber bands should prevent the pencils from slipping when in use, but the mark will show if they do slip. Two similar trays are hung from the ends of the long pencil. They consist of circular pieces of stiffish cardboard about 2 inches in diameter suspended by means of wires curved in fishhook form, the points of the hooks resting within the holes previously made in the pencil ends. The points of the hooks are bluntly and smoothly pointed, so as not to bind in the holes. Beneath the trays the wires are bent to hold the trays in level position, and are held to the tray by pieces of gummed paper. It is better to cut the trays from the edge to the center, then lap the two cut edges and glue them fast, thus making a shallow dish. The wire beneath the tray is then preferably bent in circular form. Balancing the tray hook on the finger shows the proper bending of the wire where it pierces the cardboard to make the tray hang level. A triangular piece of thin board, as a cigar-box cover, serves to hold the knife blade in position. A block holds the knife handle. The knife is set high enough to permit the trays to hang about one-half inch above the surface on which the balance rests. For the purpose of showing slight movements of the balance in exact weighing, a darning needle is set in the top of the short pencil directly over the knige edge, and at right angles to the pencil. A pin is placed in the board directly over the point where the knife point pierces it and just above the end of the needle. When the device is properly balanced the end of the needle will stand at rest directly under the pin. It probably will not balance until a staple of wire is placed over the pencils in proper position on one side of the knife blade or on the other as a counterweight. This completes the construction, and when properly mounted the balance should oscillate freely by the slightest touch. As the trays are likely to be interchanged in use it is advisable to mark each, placing corresponding marks on the ends of the pencil at which the trays preferably belong.

In making seed tests, we may use common BB shots (whole and fractional) for weights. This is because we wish to know only the comparative weights of the pure seed and of the foreign seed and other impurities in the sample. Thus if we test an amount of seed, balancing ten shots, and find that the weed seeds it contains just balance one shot, it is evident that one-tenth of the original seed, or 10 per cent. consists of impurities. In other words, 90 per cent or (90 pounds of each 100 pounds) of the original seed is pure seed. In using a balance so sensitive as the one described, a single BB shot is too heavy for use as the lightest weight. We need a weight to be balanced by only a few clover seeds at most. Very small shot is troublesome to handle and count, so we use the larger BB shots, flattening the whole ones to prevent them from rolling and cutting some into halves, quarters, eighths and sixteenths. By careful selection, according to weight, a fairly uniform series of whole and fracional shots can be provided. Now, the weight of one-sixteenth shot is 1 per cent of the weight of 6¼ shots, because 6¼ equals 100 divided by 16. So if we test a sample of seed balancing 6¼ shots any impurity balancing the 1-16 shot weight represents 1 per cent of the sample tested. If the sample is twice as heavy, balancing 12½ shots, the 1-16 shot weight represents one-half of 1 per cent. of the whole.

It is evident, therefore, that the means described enables one to determine the quantity of pure seed or of impurities in a sample to within 1 per cent, or even one-half of 1 per cent of the true quantity. This is sufficiently close for the practical seed testing under discussion.

The Forceps—A pair of forceps is very useful in picking up the small weights used with the balance, also individual seeds. Suitable forceps may be made of two thin pieces of hickory wood separated by a piece of wood to which one end of each piece is fastened. The free ends are flattened and pointed. A piece of spring wire bent in U shape and having flattened and pointed ends serves very well as forceps.

The Magnifiers—After the seed to be tested has been properly weighed it is to be separated into pure seed and foreign seed or other impurities. This requires a magnifier. Very coarse seed—such as that of wheat, oats, flax, etc.—can usually be examined by the aid of an ordinary reading glass, which is to be found in many homes or can be bought at a cost of $1 to $2. Clover seed, alfalfa seed, and the grass seeds require a magnifier of higher power. A very satisfactory magnifier of this kind is the tripod magnifier. With it one can distinguish all the kinds of crop seeds and practically all the different kinds of adulterants and weed seeds. This magnifier is sold by opticians, stationers, and druggists generally throughout the country at price ranging from 50 to 75 cents.

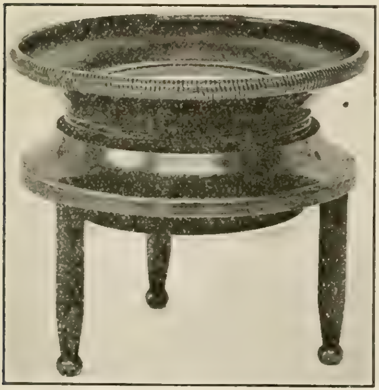


Fig. 14.—Magnifying glass.

The Paper Tray—Seed is examined best over white paper, and in order to prevent the loss of seed from a weighed sample a paper tray is useful.

Such a tray is made from stiffish white paper, as a sheet of heavy letter paper. The edges of the sheet on all four sides should be folded over, making a rim one-fourth inch wide. Folding the edges over the straight angular edge of some convenient object largely prevents the paper from warping and makes it easier to use. Cutting off one corner permits the seed to be poured easily from the tray.

The Germinator—Either blotting paper or cloth may be used to receive the seed. Clean sand may be preferable for some kinds of seed. A germinator of this description is most useful in testing forage-crop seeds or seeds of cereals. In testing corn the sand-box method is very satisfactory, or the cloth method may be employed. This method makes use of a box of convenient size, say 20 inches square, interior dimensions, and 2 or 3 inches deep. The seed is placed on white cloth, preferably Canton flannel, which is cross marked on the smooth side with distinct pencil-lines in 2-inch squares. The required moisture is held by extra thicknesses of cloth or by clean sand beneath the cloth, forming a layer about an inch thick over the bottom of the box. If Canton flannel (which comes 27 inches wide) is to be used instead of sand, the box may be made narrower than suggested, say 12 inches, thus allowing for folding the cloth and for shrinkage.

DISTINGUISHING CHARACTERS OF SEEDS.

Safeguarding Against Deception—One of the first steps in testing seeds of the forage crops is to determine if the sample is true to name, and it is necessary that these kinds of seeds be recognized with certainty. While most farmers, as a rule, can recognize red clover seed, for example, when they see it in bulk, it is not so certain that they would recognize individual seeds of red clover under all conditions, as one must in making tests of this seed. Again, alfalfa seed in bulk is recognized by most farmers, because they contrast it with red alsike, and white clover seed with which they are familiar as these edpear in bulk. It is a question, however, if the average farmer would detect yellow trefoil seed in bulk or sweet clover seed in bulk were it not for the characteristic odor of the latter. Bur clover seed would be found even more deceiving.

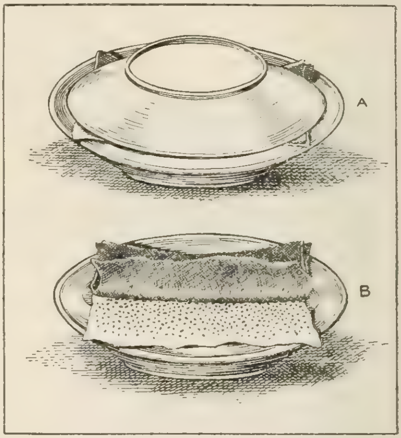


Fig. 15.—Homemade seed germinator; A, closed; B, open.

The chances for deception are even greater with grass seeds than with clover seeds, because of the striking similarity between the seeds of different kinds when seen in bulk. This similarity and the fact that mere casual examination is usually given seed by purchasers makes adulteration, substitution, and misbranding possible.

The remedy lies in familiarity with the distinguishing characters of individual seeds. By comparing seeds of the several kinds with the illustrations and descriptions here given one should be able to distinguish them individually without much difficulty.

Leguminous Seeds—All the true clovers (as red, alsike, white, and crimson), alfalfa, the vetches, trefoil, sweet clover, and bur clover, produce seeds in a pod which (except in trefoil, sweet clover and bur clover) opens at maturity. In red clover, trefoil, and sweet clover a single seed is produced in each pod. Consequently, the seeds of each kind are very similar in form. Alfalfa and bur clover produce several seeds in a spiral pod, resulting in considerable variation in the form and size of individual seeds. Seeds of the true clovers, alfalfa, trefoil, bur clovers, and sweet clover are more or less flattened and (excepting crimson clover) are notched in the edge. Within this notch the seed scar, or point of attachment to the plant, appears as a small, but distinct ring. In the more or less spherical seeds of the vetches the scar is an oval, wedge-shaped, or slender spot on the curved surface. In this class of seeds the scar is an important mark of distinction. In several of the small-seeded kinds of leguminous plants occasional pods appear even in well-cleaned lots of seed.

Most of the grass seeds, also oats and barley, appear "in the chaff," that is, the grains or kernels of the seed illustrated by the kernels of wheat and the hulled seeds of timothy are usually covered by the dried chaffy flower scales. The difference in size, form, and structure of this chaff marks the different kinds of grass seeds.

Seeds of the grasses—Grass seeds are produced in clusters (spikelets.) Some clusters contain several seeds arranged along a common axis (rachilla). At maturity the clusters break apart, each seed carrying a piece of the cluster axis (rachilla segment). Such seeds have two chaff scales, one (the lemma) larger than the other (the palet or palea). Examples of this class of grass seeds are found in orchard grass, meadow fescue, rye-grass, bromegrass, and in the blue-grasses. In another class of grasses each cluster contains but a single seed which, therefore, has no rachilla segment. The seeds of broom-corn (or grain) millet are a good example of this class, the seed scales, lemma, and palea being hard,

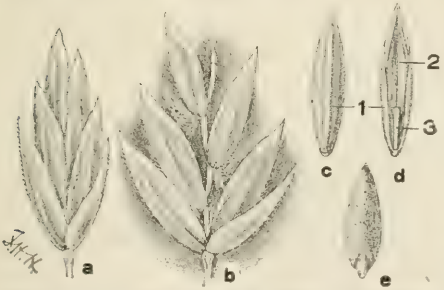


Fig. 16.—A spikelet and florets ("seeds") of Kentucky bluegrass; **a**, Spikelet as it appears at maturity; **b**, the same having the florets spread apart, showing the jointed rachilla; **c**, back view of a floret, showing the lemma (1); **d**, front view of the floret, showing the edges of the lemma (1), the palet (2), and the ranchilla segment (3); **e**, the grain or kernel of the seed.

smooth and shining. Part of the seed of foxtail millet, Japanese millet, and the foxtail weeds differs structurally from the last only in being covered by two or three additional chaffy scales, which constitute the "outer chaff."

These features of form and structure are easily recognized when representative seeds come to be compared under a magnifier, and it is advisable to understand them in making tests of clover and grass seeds, because the element of certainty is essential to satisfactory results.

IMPURITIES OF FARM SEEDS.

CLASSIFICATION.

The impurities carried by farm seeds have an important bearing on the real quality of the seed. Their quantity may be sufficient to unduly increase the cost of the good seed and their character may be that of injurious weeds.

Seed impurities are classified (1) as inert material and (2) as foreign seed, including both other crop seed and weed seeds.

INERT MATERIAL.

The inert material constitutes essentially such impurities as will not grow (exclusive of dead seed), as chaff, empty seed hulls, broken seed, pieces of stems and leaves, sand, dust, etc. The chief objection to such material is that it replaces good seed, thus increasing the cost. In grass seed the inert chaff misleads by causing the seed to present a better appearance than its quality justifies, as in bluegrass seed and chaff redtop seed. As compared with weed seeds, inert material is of minor importance, a fact not to be overlooked in the purchase and use of seed. The practical seed test should point out clearly the relative importance of the inert matter and of the weed seeds found in the sample.

OTHER CROP SEEDS.

Seed of various farm crops sometimes constitutes a part of the foreign seed. Its proportion as compared with the weed seed should be noted in making the purity test. The importance to be attached to the occurrence of such crop seed depends on its nature; for illustration, the presence of timothy seed is detrimental to alsike clover seed used with a view to alske seed production, while for hay production a mixture of timothy and alsike seed often is preferable.

WEED-SEED IMPURITIES.

Quality and Kinds of Weed Seeds—Very few samples of forage-crop seeds are found wholly free from weed seeds. The methods of culture and of harvesting in vogue operate against a pure seed crop. The proportion of the weed seeds appearing incidentally in the marketed seed is dependent on the number and character of the weeds in the seed-producing crop and the extent to which the seed has been cleaned before being marketed.

Weed seeds occurring in farm seed are of interest to the buyer of seed (1) in respect to their total quantity and (2) in respect to their kinds. In many instances low-grade seed contains so much weed seed that the quantity of the crop seed is thereby greatly reduced in a given weight of seed. Of the kinds of weed seeds 300 to 400 are known to occur in the various kinds of the common crop seeds. Occasionally from 75 to 100 kinds of weed seeds are to be found in a single sample of red clover or alfalfa seed not exceeding a few ounces in weight. In some instances one or more kinds of weed seed are very abundant in the sample. As a rule, however, most of the kinds are represented by only a few seeds.

The important question in regard to the kinds of weed seeds found in crop seed is whether the plants they produce are injurious or relatively unimportant. Some of the weed seeds commonly found in seed produce plants which are very detrimental to the crop or to the land. Everyone making tests of seed should become familiar with the seeds of injurious weeds. Most of the weed seeds found in making tests are seeds of comparatively harmless plants, and their recognition as to kind becomes more a matter of interest than one of practical importance.

Certain kinds of crop seeds, as clover, alfalfa, awnless brome grass, etc., are supplied to the American market from both foreign and domestic sources. Since domestic seed is generally preferable to that which is imported, the source of the seed as indicated by the weed seeds it contains gives an added interest to some kinds of weed seeds. Thus the presence of seeds of perhaps several kinds of native weeds in a sample of clover seed or of alfalfa seed, together with the absence of seeds commonly found in imported seed, practically amounts to proof of its domestic production. Foreign production is strongly suggested by reverse conditions. Many kinds of weed seeds found in imported seed grow and produce plants in this country, it is true, but the growth or seed production of the plants is so meager or is so restricted to certain localities that their seeds rarely or never appear in the American-grown seed crop. When such seeds appear as several kinds together, or in abundance, they practically prove the foreign origin of the seed containing them.

The illustrations of weed seeds presented here show the seeds classified (1) as noxious weed seeds found in farm seeds (figs. 17 and 18) and (2) as other weed seeds commonly found in farm seeds (figs. 19, 20, and 21.). The figures, together with the brief descriptions of distinguishing characters, should enable one readily to recognize these seeds when examined with a magnifier. Weed seeds that are found with the several kinds of clover, grass, and cereal seeds are mentioned under the subsequent discussion of the testing of these crop seeds.

NOXIOUS WEED SEEDS FOUND IN FARM SEEDS.

The following brief descriptions point out the most conspicuous distinctions between the seeds of various noxious weeds. They only supplement the illustrations to which they refer and which show the general form and structure and the natural size of the seeds. The serial order is employed for ready reference in the subsequent discussion of testing particular kinds of seeds.

The seeds of sand bur (fig. 17, a) have somewhat the appearance of small wheat kernels, usually light brown or straw colored; common in alfalfa seed from the Great Basin region. The spiny burs of this grass reduce the feeding quality of alfalfa hay.

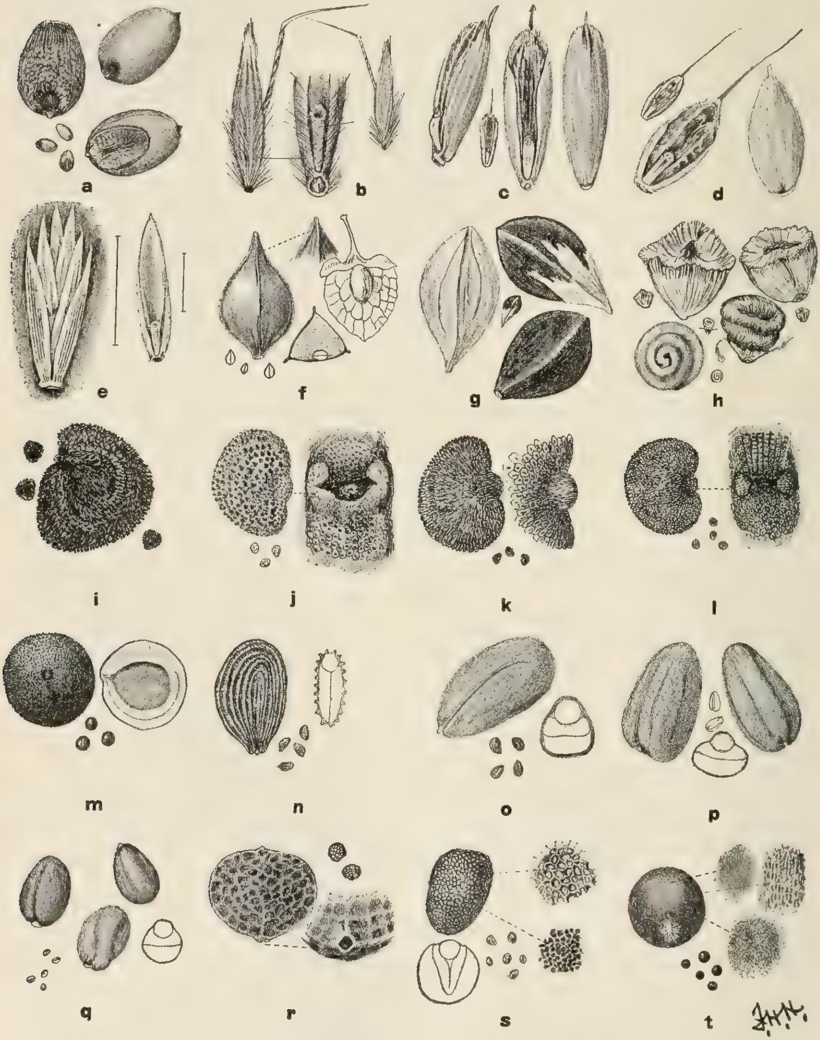


Fig. 17.—Noxious weed seeds found in farm seeds (No. 1); **a**, Sand bur; **b**, wild oat; **c**, chess; **d**, darnel; **e**, quack-grass; **f**, dock; **g**, black bindweed; **h**, Russian thistle; **i**, corn cockle; **j**, white campion; **k**, bladder campion; **l**, night-flowering catchfly; **m**, cow cockle; **n**, pennycress; **o**, field pepper-grass; **p**, large-fruited false flax; **q**, small-fruited false flax; **r**, ball mustard; **s**, black mustard; **t**, English charlock. (Enlarged and natural size.)

The seeds of wild oats (fig. 17, b) are similar to seeds of cultivated oats, but always have a twisted and bent, brown or straw-colored awn (sometimes broken away) from near the middle, a tuft of light-brown hairs on the rachilla segment and about the characteristic, cup-shaped rim of the scar at the base of the seed; widely distributed and common in seeds of cereals (especially oats) and large-seeded grasses.

Chess (or cheat) seeds (fig. 17, c) are straw colored, sometimes greenish or brown when in the chaff (as figured), the awn at the apex often broken away, the club-shaped form of the rachilla segment distinguishing this from cultivated grass seeds; common in seeds of cereals and large-seeded grasses generally; the reddish-brown, trough-shaped free grains sometimes appear in clover seed.

Darnel seeds (fig. 17, d) are robust, straw colored, and in the absence of the slender awn somewhat resemble large seeds of meadow fescue and English rye-grass; common in seed of cereals, particularly wheat.

Quack (or couch) grass seeds (fig. 17, e) closely resembles fescue and rye-grass seeds, but they are usually slenderer, light (or yellowish), sometimes greenish colored; whole spikelets having the two empty scales noticeably joined at the same level at the base of the spikelet (thus differing from most grass spikelets) are invariably found with the individual seeds. Commonly found in seeds of cereals and the coarse grasses, especially in the seed of awnless brome-grass imported from Europe.

Dock seeds (fig. 17, f) are sharply 3-angled, reddish brown, smooth, and shining; one of the commonest of the weed seeds of farm seeds generally, the reddish brown ripened flowers (shown at the right of the figure) commonly appearing in seeds of cereals and coarse grasses. Several kinds of dock seeds occur in farm seeds, the commonest being that of curled dock (figured). The similar seeds of broad-leaved (or bitter) dock are sometimes found. Another kind having smaller seeds which are rounded instead of pointed at the base occurs in Chilean red clover seed.

Black bindweed seeds (fig. 17, g) are coarse, 3-angled, black when the outer covering is removed; the outer straw-colored, greenish, or brown covering (flower scales) may be present or partly or wholly broken away; common in all kinds of coarse farm seeds from all sources, particularly in seed of cereals, millet, and flax.

Russian thistle seeds (fig. 17, h) occur both with and without the gray or light brown hull (flower scales); the seeds proper have a thin coat covering the slender spirally coiled, greenish embryo; common in alfalfa seed from the Western States and in flaxseed; doubtless occasionally introduced in seed from Russia. As an impurity of alfalfa seed it strongly suggests Western States production.

The seeds of corn cockle (fig. 17, i) are black or brown, angular, and covered with fine spiny tubercles; common in seed of cereals, millets, vetches, and flax from all sources.

White campion seeds (fig. 17, j) are mostly light gray, the surface finely tubercled, the light color distinguishing this kind from the next two; common in imported crimson clover and grass seeds; sometimes found in red clover seed.

Bladder campion seeds (fig. 17, k) are brown or nearly black, flattened, finely tubercled, the tubercles arranged in more or less distinct rows on the sides and in more distinct rows on the edges; occurs frequently in imported grass seed and is sometimes abundant in seed of red and alsike clovers grown in the Northern States and in Canada.

Night-flowering catchfly seeds (fig. 17, l) are similar to the preceding dark gray or brown, finely tubercled, the tubercles not in distinct rows on the sides; very common and often abundant in seed of red and alsike clovers grown in the Northern States and in Canada. Careful comparison of seeds with the illustrations (fig. 17, j, k and l; fig. 19, t) will enable one to distinguish the similar seeds of this group of weeds. Fig. 19, t, shows the seed of the forked catchfly, which is common in low-grade European red clover and alfalfa seed.

The seeds of cow cockle (fig. 17, m) are almost perfectly spherical, black, the surface covered with fine tubercular points; very common in seeds of cereals from the West and Northwest; also in millet and flax seeds, sometimes in imported coarse seeds; broken seeds often occur in alfalfa seed from the Western States, thus indicating its sources.

Pennycress (or Frenchweed) seeds (fig. 17, n) are oval, flattened, brown, and have concentric ridges on the sides; often found in both domestic and imported seed of cereals, clovers, millets and flax. This is a dreaded weed in the Northwestern States.

Field peppergrass seeds (fig. 17, o) are reddish brown, oval, smooth, and show a curved line on each side; common in domestic and imported seed of various clovers, grasses, and cereals.

False flax seeds (fig. 17, p and q) as found in farm seeds represent two kinds of false flax (plants in no way related to the true flax). Seeds of the large-fruited false flax (fig. 17, p) are light yellow and much larger than those of the other kind; very common in flax seed (hence the common name); also, in millet and sometimes in alfalfa seed; common in coarse farm seeds from Russia. Seeds of small-fruited false flax (fig. 17, q) are much smaller than the others, and darker, being reddish yellow; common in Canadian red and alsike clovers and timothy seed.

Ball mustard seeds (fig. 17, r) are unopened, straw-colored, brown or purplish pods, having a network of ridges over the surface and containing a single yellowish seed within; found in seed of cereals, millets, and flax; sometimes in imported seed. This is a troublesome weed in certain sections of the Northern States.

Black mustard seeds (fig. 17, s) are small, commonly somewhat oblong, and reddish brown or dark brown, sometimes gray, surface pitted, due to a network of ridges; taste distinctly pungent; sometimes found in clover and grass seeds.

English charlock, or wild mustard, seeds (fig. 17, t) are almost spherical, slightly variable in size, black, reddish brown, or sometimes light brown, the surface camparatively smooth, which distinguishes this seed from seed of other mustards and rape; taste somewhat pungent; a frequent impurity of nearly all the common clover grass, and cereal seeds; sometimes an adulterant of rape seed.

Indian (or brown) mustard seeds (fig. 18, a) are oblong-spherical, averaging larger than those of charlock, light-reddish brown, the surface having a distinct network of fine ridges; taste not pungent; occuring chiefly in seeds of cereals, millets, and flax; common in imported flax seed; sometimes mixed with rape seed.

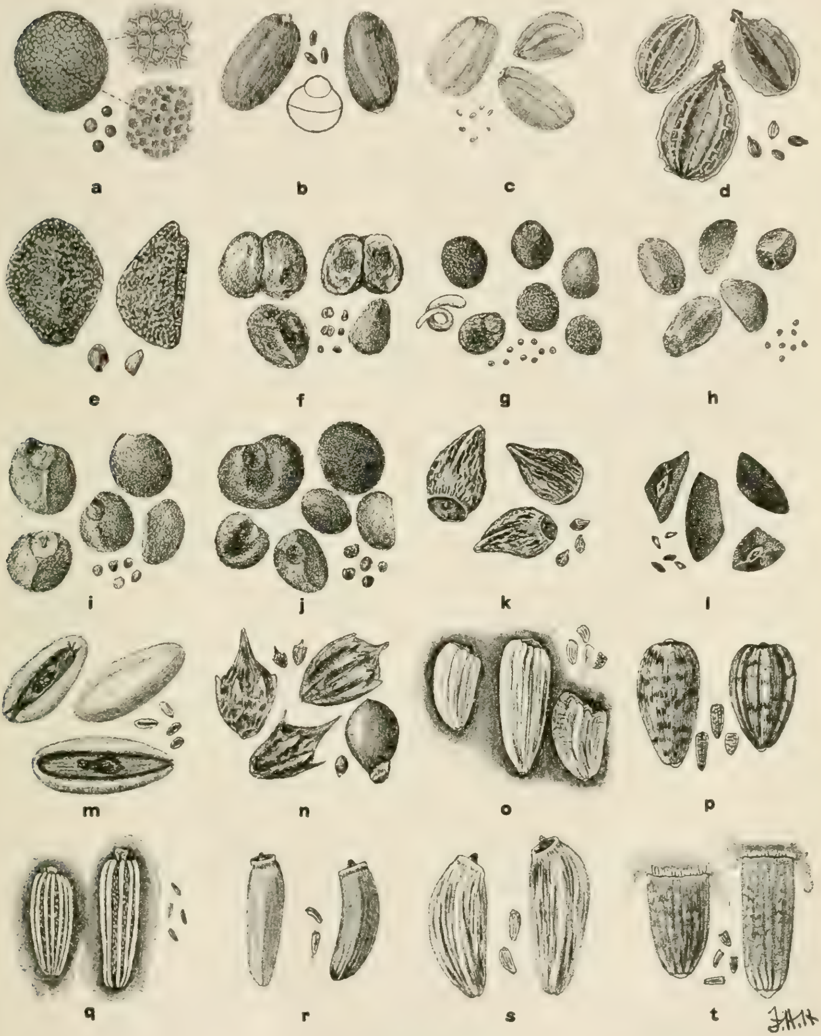


Fig. 18.—Noxious weed seeds found in farm seeds (No. 2); **a**, Indian mustard; **b**, hare's-ear mustard; **c**, tumbling mustard; **d**, wild carrot; **e**, field bindweed; **f**, flax dodder; **g**, clover dodder; **h**, small-seeded alfalfa dodder; **i**, field dodder; **j**, large-seeded alfalfa dodder; **k**, corn gromwell; **l**, rat-tail plantain; **m**, buckhorn; **n**, ragweed; **o**, gum-weed; **p**, wild sunflower; **q**, ox-eye daisy; **r**, Canada thistle; **s**, bull thistle; **t**, mild chicory. (Enlarged and natural size.)

Hare's-ear mustard seeds (fig. 18, b) are oblong, surface granular, dark brown, and if placed in water develop mucilage which forms whitish projecting points over the surface on drying; common in seed of cereals, millets, and flax; often in imported seed. This is an objectionable weed of the Northern States.

Tumbling mustard seeds (fig. 18, c) are very small, flattened, oblong, and yellowish, often with a greenish line along the side; found in clover and flax seed from the Northwest.

Wild carrot seeds (fig. 18, d) are light brown, oval, flattened, nearly plane on one side and ridged lengthwise on the other, the ridges often bearing the remnants of whitish spines; common in red clover and in imported alfalfa seeds, sometimes found in grass seed.

Field bindweed seeds (fig. 18, e) are coarse, oval, rounded on one side and angular on the other, gray, owing to numerous light-colored raised spots on the surface; common in seeds of cereals, in flax, and in other coarse seeds.

Seeds of the dodders (fig. 18, f-j) as a group are recognized by their dull, finely roughened surface, together with their rounded or angular form and their small size. The slender spirally coiled embryo of the seed, devoid of two cotyledons, is characteristic of dodder seed.

Flax dodder seeds (fig. 18, f) are rounded on one side and angular on the other, many of the seeds united together in pairs; soiled gray in color; found only in flax seed; common in imported seed and in some domestic seed. (See fig. 12.)

Clover dodder seeds (fig. 18, g) are very small, nearly spherical as a rule, gray or brown; often distinctly pitted; common in imported clover and alfalfa seeds; not found in grass seed. (See figs. 1 and 2.)

Small-seeded alfalfa dodder seeds (fig. 18, h) are similar in size to seeds of clover dodder, but are more oval and angular in form; colors yellowish, greenish, or purplish; common in alfalfa seeds from the Western States. Of the dodders infesting alfalfa this is the most widely distributed within the United States. Its seed is not found in red clover or grass seeds.

The seed of clover dodder and small-seeded alfalfa dodder are sufficiently small to admit of being wholly removed from clover or alfalfa seed of good grade by the use of a sieve of proper mesh (about 20 to the inch). Clover dodder is a menace in any part of the country. Small-seeded alfalfa dodder appears to be naturally confined to the dry regions of the West.

Field dodder seeds (fig. 18, i) are larger than those of clover or small-seeded alfalfa dodder, rounded on one face and flattened and angular on the other; the characteristic seed scar is a more or less distinct, circular area having a short, raised whitish line in its center; seeds from the Great Basin region gray or pinkish, those from Chile (evident in Chilean red clover and alfalfa seed) reddish brown; found in both red clover and alfalfa seed, commonest in western-grown alfalfa seed and in Chilean red clover and alfalfa. The plants are very destructive to clover and alfalfa.

Large-seeded alfalfa dodder seeds (fig. 18, j), the largest of the dodders found in alfalfa, are variable in size; some are not larger than and are similar to the seeds of field dodder; the largest are nearly circular, rounded, and flattened; color gray, greenish, or more commonly brown; scar devoid of the raised whitish line to be seen in field dodder and often indistinct; found only in alfalfa seed produced in the Western States. This dodder does not appear to thrive in the Eastern States. Field dodder and large-seeded alfalfa dodder are termed large seeded because their seeds can not be wholly removed from clover and alfalfa seed. The greater part of the field dodder can be removed by the use of a sieve of 20 meshes to the inch.

Corn gromwell seeds (fig. 18, k) are oval, gray, or brown, and being very hard the name "stoneseed" is often applied to them; found in seed of red and crimson clovers, alfalfa, cereals, grasses, etc.

Rat-tail plantain seeds (fig. 18, l) are small, flat, angular and black; the scar in the center of one side; common in seed of clovers and some grasses. Known also as broad-leaved plantain and as Rugel's plantain; a persistent weed.

Buckhorn seeds (fig. 18, m) are smooth, shining, rounded on one side with a deep groove on the other, brown or amber colored, becoming coated with mucilage when placed in water, one of the commonest impurities of farm seeds, often very abundant in seed imported from Europe. Not abundant in alfalfa seed produced in the Western States. Known also as plantain, English or narrowleaved plantain, and rib-grass.

Ragweed seeds (fig. 18, n) as they commonly occur are somewhat top shaped, usually with a crown of several teeth or spines; the outer covering is often broken away, the seed then appearing pear-shaped, smooth, and brown; common in American red clover and in cereal grain.

Gumweed seeds (fg. 18, o) are whitish or straw colored, variable in form, sometimes wrinkled; found chiefly in alfalfa seed from the Western States.

Wild sunflower seeds (fig. 18, p) have the form and the striped, mottled appearance familiar in the cultivated sunflower seeds, but are much smaller; common in alfalfa seed and other seeds from the Western States.

Oxeye daisy seeds (fig. 18, q) are very small, but are readily distinguished by the 10 slender, white ridges which extend from end to end, one end usually bearing a knob-like projection; found frequently, but usually not abundant, in clover seed and small grass seed.

Canada thistle seeds (fig. 18, r) are smooth, light brown, straight or curved, having a cuplike rim at one end, a projecting point often within the rim; found in clover seed, particularly alsike from Canada; sometimes in seed of clover and grasses from Europe.

Bull thistle seeds (fig. 18, s) are larger than those of the Canada thistle, light colored, striped lengthwise with brown, the rim at one end often yellowish; common in red clover, alfalfa, and grass seeds.

Wild chicory seeds (fig. 18, t) are brown or straw colored, usually mottled, the crown scales at the broader end sometimes rubbed away; common in imported clover, alfalfa and certain kinds of grass seeds, occurring in lesser degree in American-grown seed.

OTHER WEED SEEDS COMMONLY FOUND IN FARM SEEDS.

Certain kinds of weed seeds other than those termed noxious under the preceding heading are found frequently, sometimes abundant, in various kinds of farm seeds, and thus cause inquiry from one examining seeds. The degree of noxiousness of this class of weed seeds differs with the kinds and with the conditions of locality, climate, etc., under which they are sown. While some of the kinds included in the present list are looked upon, at least locally, as pests, many of the kinds mentioned are of little importance as field weeds. Since it is essential to distinguish the relatively unimportant from the important seeds, a fairly accurate classification of the weed seeds found in farm seeds with respect to their relative importance is a desirable feature of popular seed testing.

The following brief descriptions refer serially to illustrations of 60 kinds of weed seeds shown in figures 19, 20, and 21.

Crab-grass seeds (fig. 19, a) usually bear the outer chaff, which is often soft-hairy, one scale as long as the seed and distinctly 3-ridged, the other half the length of the seed; straw colored, brown, or purplish; common in seeds of clovers, alfalfa, and grasses; plants sometimes very troublesome.

Witch-grass seeds (fig. 19, b) occur both with and without the outer chaff, which is lance shaped, smooth and brown; seeds freed from the chaff are oval, light gray or dark gray, smooth, and polished; common in seeds of clovers, alfalfa, and grasses; plants widely distributed; comparatively unimportant.

Yellow foxtail seeds (fig. 19, c) are oval, flat on one side and arched on the other, chaff straw colored, light brown, or greenish, as long as the seed on the flat face, a half-length scale on the arched face; the light-colored or dark-colored seed within the chaff distinctly ridged crosswise on the arched face, often free from the outer chaff; common in many kinds of farm seeds.

Green foxtail seeds (fig. 19, d) are oval, convex on both faces, the whitish or straw-colored outer chaff as long as the seed on both faces; seed within the chaff straw colored, gray, or brown, the darker seeds often mottled, the surface finely roughened and dull; common in many kinds of farm seeds. Both yellow and green foxtail grasses are widely distributed summer weeds occupying valuable space in crops. Green foxtail seeds are distinguished from seeds of foxtail millet by their smaller size and rough, dull surface.

Velvet grass seeds (fig. 19, e) usually appear in the chaff, which is thin, oval, and straw colored, the surface covered with fine, stiffish hairs; a single oval, shining seed usually found within the chaff; a common impurity of coarse grass seeds.

Soft chess seeds (fig. 19, f) are lance shaped, usually much flattened, straw colored, the lemma awned at its apex, its back usually wrinkled, the palea and grain shorter than the lemma; common in imported coarse grass seeds; widely distributed in the United States, but not an important weed except on the Pacific coast.

Sedge seeds (fig. 19, g) when covered by the chaffy hull are flask shaped, straw colored, brown, or greenish, flattened and thin with respect to the several kinds found in farm seeds; seeds freed from the outer chaff are oval, lens shaped, and light brown; common in grass seeds, particularly bluegrass seed; plants comparatively unimportant.

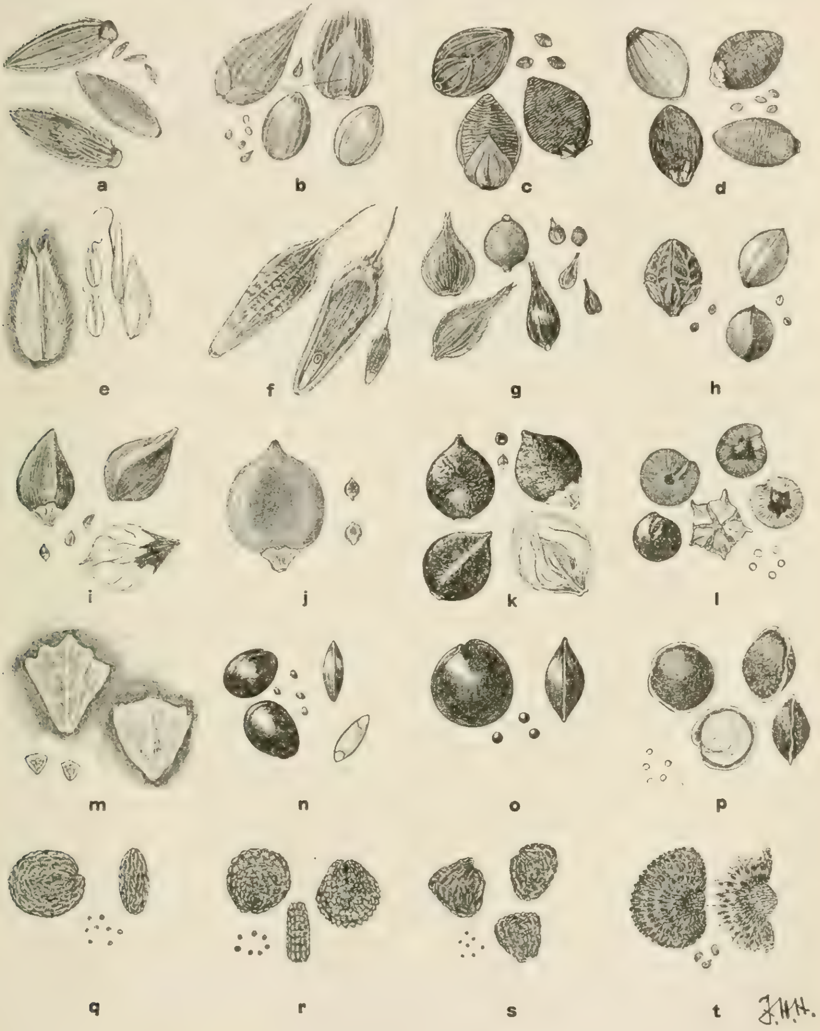


Fig. 19.—Other weed seeds commonly found in farm seeds (No. 1); **a**, Crab-grass; **b**, witch-grass; **c**, yellow foxtail; **d**, green foxtail; **e**, velvet grass; **f**, soft chess; **g**, sedge; **h**, sorrel; **i**, knot-weed; **j**, pale knot-weed; **k**, lady's-thumb; **l**, lamb-quarters; **m**, wild saltbush; **n**, rough amaranth; **o**, spreading amaranth; **p**, wild spurry; **q**, and **r**, chickweed; **s**, mouse-ear chickweed; **t**, forked catchfly. (Enlarged and natural size.)

Sorrel (or sheep's sorrel) seeds (fig. 19, h) are small, oval, 3-angled, the outer chaffy hull dull reddish brown; seeds freed from the hull are reddish brown, smooth, and polished; found in farm seed both with and without the hull; a common impurity, appearing in seeds of clovers, grasses, poorly cleaned cereals, millets, etc.; a cosmopolitan weed often troublesome until subdued.

Knotweed seeds (fig 19, i) are sharply oval, 3-angled, dull reddish-brown in the absence of the brown chaffy covering, a part of which is usually borne at the broader end; common in clover seed and grass seed; plants usually of minor importance as field weeds.

Pale knotweed seeds (fig. 19, j) are nearly circular, flattened, and chestnut brown when freed from the reddish-brown, sometimes adherent, chaffy covering; common in seed of coarse grasses, cereals, and flax, often abundant in imported seed. The plants grow chiefly in moist places and are not troublesome on uplands.

Lady's-thumb seeds (fig. 19, k) are usually free from the chaffy covering and are then black, shining, broadly oval, and flattened, or sometimes 3-angled; common in various kinds of farm seeds, particularly American-grown red clover seed. The habit of the plant is similar to that of the preceding knotweeds, to which it is closely related. This plant is common on dry uplands.

Lamb's-quarters (goosefoot) seeds (fig. 19, l) are small, lens shaped, dark brown, or black and shining, sometimes found within a chaffy covering of five scales; common in all kinds of farm seeds, particularly clover and grass seeds; a well-known weed of gardens, cultivated fields, and meadows.

Wild saltbush seeds (fig. 19, m) are thin, triangular or wedge shaped, veined, straw colored, or purplish, their two scales inclosing a single small seed; found in American-grown alfalfa, not appearing in imported seed.

Amaranth (pigweed) seeds (fig. 19, n and o) are lens shaped, black, and highly polished. Seeds of rough amaranth (fig. 19, n) are oval in outline; those of tumbling amaranth are somewhat smaller and nearly circular in outline, while seeds of spreading amaranth (fig. 19, o) are much larger and nearly circular in outline, the sides being strongly convex. Seeds of rough amaranth and of tumbling amaranth are common in various kinds of farm seeds, particularly clover. Spreading amaranth is native in the Western States and its seeds often appear in alfalfa from that region.

Wild spurry seeds (fig. 19, p) are very small, black, and nearly spherical. A narrow light-colored rim encircles the seed and serves to distinguish it from other weed seeds. Some seeds are flecked with whitish particles; common in imported clover seed.

Chickweed seeds (fig. 19, q and r) are small, mostly brown, nearly circular, and flattened; one kind (fig. 19, q) common in clover seed imported from Europe, has numerous interlacing wrinkles covering the surface, the other kind (fig. 19, r) is borne by a common weed in lawns, gardens, and thin meadows, has the surface covered with individual tubercles arranged in more or less distinct rows, and is found in both imported and domestic clover seed.

Mouse-ear chickweed seeds (fig. 19, s) are minute, flattened, wedge-shaped, tubercled, and distinctly reddish brown; common in small clover and grass seeds, particularly in alsike and timothy produced in Canada. This is a somewhat insignificant weed of lawns and thin meadows.

Forked catchfly seeds (fig. 19, t) are very similar to those of white campion (fig. 17, j), bladder campion (fig. 17, k), and night-flowering catchfly (fig. 17, l), but differ in having the tubercles on each face of the seed arranged in a few distinct rows. These kidney-shaped brown seeds often appear in European-grown red clover and alfalfa seed.

Creeping buttercup seeds (fig. 20, a) are oval, flattened, brown or reddish brown, with a lighter rim, and have a prominent, straight, or slightly curved beak; common in imported crimson clover, meadow fescue, and rye-grass seeds.

Peppergrass seeds (fig. 20, b) are oval, flattened, thin, reddish yellow, and have a curved groove on each face; common, and sometimes abundant, in clover and grass seeds, particularly in timothy; a widely distributed annual weed of waysides, gardens, and meadows.

Shepherd's-purse seeds (fig. 20, c) are minute, reddish yellow, oblong, and flattened, with two more or less distinct grooves on each face; common in seeds of white, alsike, and poorly cleaned red clovers; a cosmopolitan, annual weed.

Cinquefoil seeds (fig. 20, d) are minute, straw colored, oval, and lens shaped, the faces bearing curved and forked ridges; common in alsike clover and timothy.

Hop clover seeds (fig. 20, e) are minute, elliptical, yellowish, the surface smooth and shining; common in poorly cleaned clover seed. The reddish flowers (shown at the right of the figure) are common in imported orchard grass, meadow fescue, and rye-grass seeds.

Yellow trefoil seeds (fig. 20, f) are oval with a projecting point on the edge, yellowish brown, or tinged with green. Besides being used as an adulterant of clover and alfalfa seed, some seeds occur incidentally in clover and grass seeds. Mature, black, oval pods or immature green pods are common in coarse grass seeds. The plants are widely distributed here and in foreign countries.

Bird's-foot trefoil seeds (fig. 20, g) are small, nearly spherical, brown, and often mottled; frequently found in imported clover and alfalfa seeds; a cultivated plant in Europe.

Wild geranium seeds (fig. 20, h, i, and j) as commonly found in farm seeds represent three kinds of plants. Seeds of one kind (fig. 20, h) are oblong and pitted, having a whitish or light-brown network over a darker brown background (thus readily distinguished from other seeds); common in imported crimson clover and coarse grass seeds. Another kind (fig. 20, i) has smaller, smooth, rounded seeds which are often covered by a brown hull bearing several diagonal ridges on each side; often found in imported clover and grass seeds. A third kind (fig. 20, j) has more oval, smooth seeds, some of which are covered by a somewhat flattened, finely hairy hull; found in imported clover and grass seeds.

Stork's-bill seeds (fig. 20, k) are somewhat club shaped, smooth, brown, and often covered by a sharp-pointed, brown, hairy hull; found in clover, alfalfa, and grass seeds; commonest in imported seed.

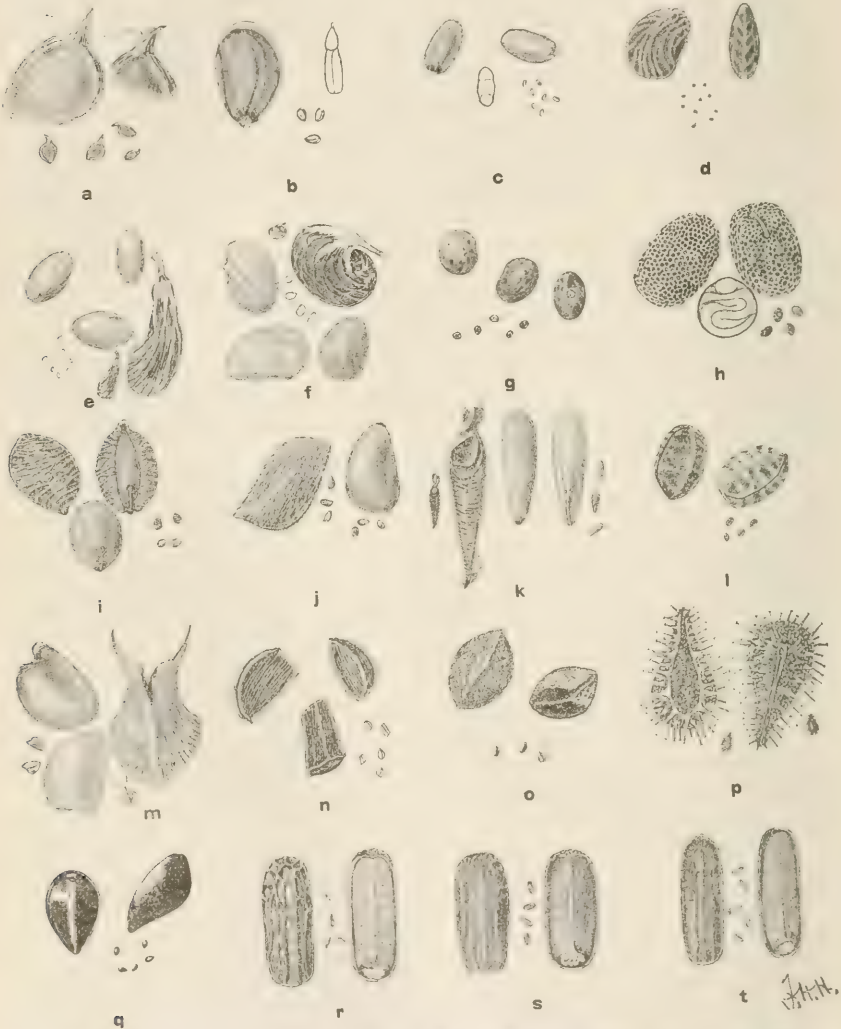


Fig. 20. Other weed seeds commonly found in farm seeds (No. 2); **a**, Creepingbuttercup; **b**, pepper-grass; **c**, shepherd's purse; **d**, cinquefoil; **e**, hop clover; **f**, yellow trefoil; **g**, bird's foot trefoil; **h**, **i**, and **j**, wild geraniums; **k**, stork's-bill; **l**, spurge; **m**, spiny sida; **n**, evening primrose; **o**, red pimpernel; **p**, sticktight; **q**, forget-me-not; **r**, **s**, and **t**, vervain. (Enlarged and natural size.)

Spurge seeds (fig. 20, l) are steel gray or dark brown, oval, and somewhat 4-angled, the angles lightest colored, a few cross-ridges between the angles, one of the angles bearing a slender, black line; common in American red clover seed.

Spiny sida seeds (fig. 20, m) are brown, rounded on one side, angular on the other, and notched at the broader end; common in American-grown red clover seed; the forked, often netted-veined seed vessels (shown at right hand side of figure) sometimes appear in poorly cleaned clover, but are more common in grass seeds.

Evening primrose seeds (fig. 20, n) are small, reddish brown, and angular, prismatic, or curved; the corners are thin-edged, the faces finely grooved; common in timothy and sometimes found in clover seed.

Red pimpernel seeds (fig. 20, o) are small, 3-angled, and reddish-brown; surface finely roughened or sometimes partly smooth and black; somewhat resemble seeds of sorrel (fig. 19, h) having the chaffy covering; very common in imported clover and alfalfa seeds, often in grass seed.

Sticktight seeds (fig. 20, p) are small, oval, brown burs having many barbed prickles; when in clover, most of the prickles are usually broken away; when in grass seeds, some or all of the prickles are usually uninjured; found in red clover, particularly that from Canada, in seed of coarse grasses, millets, cereals, and flax; often in seed imported from Europe.

Forget-me-not seeds (fig. 20, q) are small, black, shining, oval, rounded on one face, and angled on the other; common in imported clover and grass seeds.

Vervain seeds (fig. 20, r, s, and t) are oblong, reddish or dark brown, veined on one side, angled and often gray on the other. One kind (fig. 20, r) has a distinct network of ridged veins on the back, the surface between the veins shining; common in European clover and alfalfa seeds. The other two kinds of vervain commonly found in farm seeds have indistinct veins on the back which is dull, one of them (fig. 20, s) being comparatively broad and brown; the other (fig. 20, t) being slender and lighter, reddish colored; seeds common in American-grown clover seed.

Catmint seeds (fig. 21, a) are oval, dark reddish brown or darker, smooth and dull, readily distinguished by the two white scar spots, side by side at one end of the seed; common in clover seed, particularly Canadian-grown alsike.

Healall seeds (fig. 21, b) are light brown, oval, with a characteristic whitish appendage at the pointed end, faint dark lines traversing the faces and edges; one of the commonest impurities of both domestic and imported clover and grass seeds.

Rough-leaved toadflax seeds (fig. 21, c) are very small, oblong, having a light-brown, wrinkled surface; plants not evidently important, but the seeds, as common impurities of imported clover seed, indicate the foreign origin of the lots containing them.

The smaller broad-leaved plantain seeds (fig. 21, d) are similar to those of rat-tail plantain (fig. 18, l), but are smaller, greenish or brown, the surface having slender, wavy dark lines; common in poorly cleaned clover and grass seed.

Bracted plantain seeds (fig. 21, e) are similar to those of buckhorn (fig. 18, m), but they are broader, dull reddish brown, and the broad

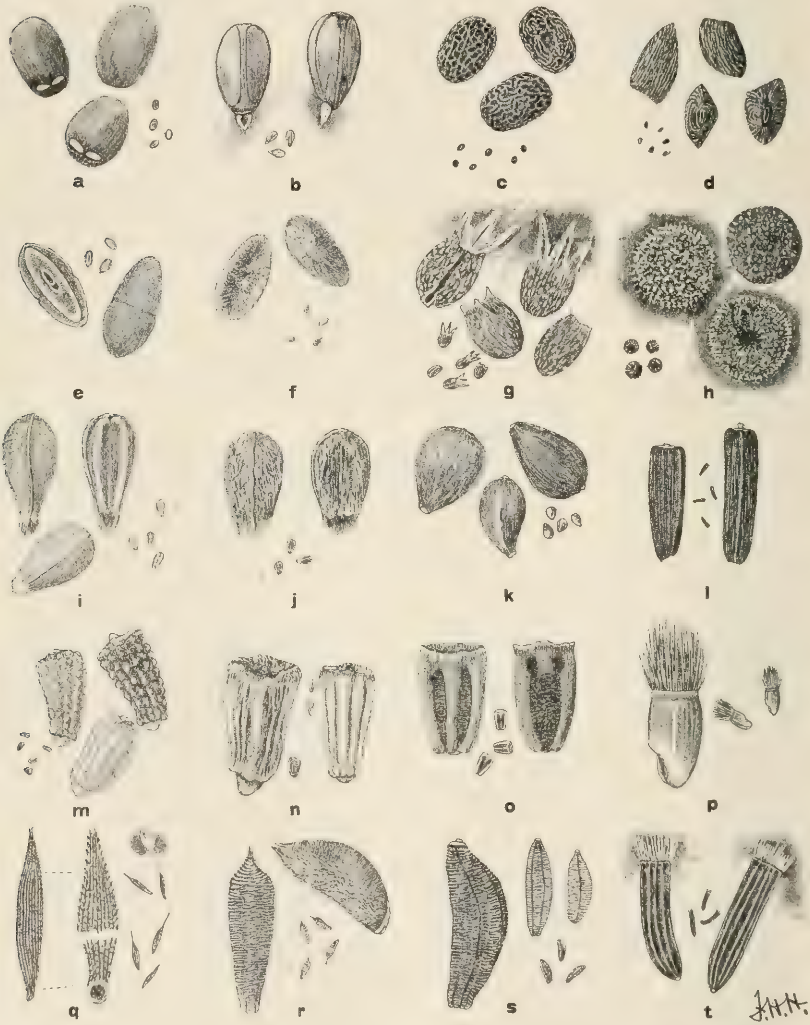


Fig. 21.—Other weed seeds commonly found in farm seeds (No. 3); **a,** Catmint; **b,** healall; **c,** rough-leaved toadflax; **d,** smaller broad-leaved plantain; **e,** bracted plantain; **f,** dwarf plantain; **g,** field madder; **h;** cleavers, **i** and **j,** wild corn salad; **k,** poverty weed; **l,** black-eyed susan; **m,** dog fennel; **n,** field camomile; **o,** scentless camomile; **p,** corn flower; **q,** cat's-ear; **r,** oxtongue; **s,** hawkweed picris; **t,** hawkweed. (Enlarged and natural size.)

groove on one face is bordered by a white stripe; the rounded face is crossed near its center by a shallow groove; common in Amrican-grown red clover seed; sometimes found in alfalfa and grass seeds and occasionally in imported seed; a common annual plant of light lands.

Dwarf plantain seeds (fig. 21, f) are light brown, oval, rounded on one face, and broadly grooved on the other; found in crimson clover seed produced in Atlantic Coast states.

Field madder seeds (fig. 21, g) are oval, gray in having numerous white surface spots, some of the seeds having three frail, whitish teeth, others devoid of the teeth; common in seed of clover, alfalfa, and grasses; confined chiefly to imported seed.

Cleavers seeds (fig. 21, h) are coarse, circular, one face rounded, the other depressed in the center; the surface is covered with hair-bearing tubercles from which the hairs may be more or less rubbed away; the entire outer surface is sometimes rubbed away, leaving the seed smooth and brown; common in seed of coarse grasses, millets, cereals, and flax; a common impurity of imported seed.

Seeds of wild corn salad representing two kinds, commonly appear in clover imported from Europe. They are brown, one kind (fig. 21, i) being slenderly oval and nearly smooth, the other (fig. 21, j) being broader and usually more or less covered with white hairs. The presence of these seeds in clover indicates its foreign production.

Poverty weed seeds (fig. 21, k) are oval and dull brown, straight, or somewhat curved. They occur in alfalfa seed from the Western States; not found in foreign grown seed.

Black-eyed Susan, or yellow daisy, seeds (fig. 21, l) are minute, black, prismatic, finely ridged lengthwise, and 4-angled; found chiefly in timothy seed.

Mayweed (dog fennel) seeds (fig. 21, m) are oval or club shaped, straw colored or brown, ridged lengthwise, the ridges more or less distinctly tubercled; very common in both domestic and imported seed of clover and grasses.

Field camomile seeds (fig. 21, n) are prismatic, some broad and deeply grooved lengthwise, others slender and lightly grooved or smooth; color whitish, light brown, or dark brown; common in domestic and imported clover and grass seeds.

Scentless camomile seeds (fig. 21, o) are prismatic, the surface rough and black, one face having three prominent brown ribs, the other showing two of these ribs and a partial third rib; common in poorly-cleaned clover seed and grass seed, particularly the seed of sweet vernal grass imported from Europe.

Corn flower (blue bottle) seeds (fig. 21, p) are easily recognized by the bluish color of the body of the seed and the tawny color of the brush of bristles each bears; common in both domestic and imported coarse seeds, including crimson clover, grasses, cereals, millets, and flax.

Cat's-ear seeds (fig. 21, q) are slender, reddish brown, rough, and sometimes bear a slender beak tipped by a brush of whitish bristles; found in clover seed and grass seed, a common impurity of imported seed.

Oxtongue seeds (fig. 21, r) are mostly lance shaped, reddish yellow, the surface having dark transverse lines, the margin at the broader end of the seed roughened (as shown at the left of the figure); a part of the seeds whitish, curved, the inner curved edge white-hairy (shown at the upper right-hand of the figure); common in poorly cleaned red clover and alfalfa seeds imported from Europe; not found in domestic grown seed.

Hawkweed picris seeds (fig. 21, s) are reddish brown, straight or curved, bearing fine transverse, dark-edged ridges, the faces of the seed having one or two slender grooves lengthwise; frequently found in imported red clover and alfalfa seed.

Hawkweed seeds (fig. 21, t) are small, black, cylindrical, ridged lengthwise, pointed at one end, the opposite end bearing a short brush of fine, white bristles: common in grass seed. The seeds of several kinds of hawkweed are similar. One kind is the orange hawkweed, which has proved troublesome in the Northeastern States.

DETAILS OF MAKING SEED TESTS.

Procedure.—Certain details of procedure in making seed tests should be followed if tests of seeds of different kinds are to be fairly comparable. The natural course to be followed in testing forage-crop seeds involves, in general, the preparation of the small sample for actual test, its examination, the separation of the crop seed and its impurities, a test of the germinating power of the crop seed, and the determination of the actual value of the seed as compared with pure seed.

Careful work in making a test is comparatively useless if the sample does not fairly represent the bulk of the seed from which it is taken.

The responsibility for selecting the small trade sample rests entirely with the dealer who submits it. When seed in bulk, as in a sack, is to be sampled, small amounts of seed should be taken from the top, bottom, sides, and center of the sack. If the sack be emptied and the seed thoroughly mixed, it is probable that a fairer sample can be taken.

The test sample.—Since the small sample thus taken or the trade sample will be too large to be tested in its entirety, it must be again subdivided to obtain the test sample. In official tests this all-important subdivision is effected by the use of a mechanical mixer, which takes a little from all parts of the larger quantity. In home testing perhaps there is no better plan than to pour the seed in a symmetrical pile on a flat surface and carfully subdivide it by means of a table knife. A subdivision amounting to a teaspoonful for the clovers and small-seeded grasses, a tablespoonful for the coarse grass seeds, and a considerably larger amount for cereal grains may be accepted for the test.

The balance previously described having been put in proper condition for use, the total weight of the selected sample is to be taken and recorded in terms of whole and fractional shots. This permits the computation of percentages by ordinary division according to the methods used in percentage. If, however, quantities of seed balancing 6¼ or 12½ shots are used, the one-sixteenth shot weight represents 1 per cent or one-half of 1 per cent, as heretofore explained.

The pure seed. After the sample is weighed it is spread on a sheet of white paper folded in the form of a tray and should first be examined with reference to whether it is true to name. Attention should then be directed to the possible presence of some particular adulterant liable to be present. All the foreign seeds (except certain adulterants), including other crop seeds and weed seeds, also inert matter, as pieces of stems, chaff, sand, and badly broken seeds, are to be separated from the kind under test. Both plump and shriveled crop seed should be classed as "pure seed." While the shriveled seed very evidently may be worthless it nevertheless is a part of the crop seed, and its worthlessness will appear in the subsequent germination test.

If certain specific adulterants, as trefoil, sweet clover, bur clover, Canada blue-grass, and rye-grass, are found, the adulterant seeds are left mixed with the crop seed when the other foreign seeds are separated. The proportion of the adulterant is then determined by count from a part of the mixture.

If certain kinds of foreign crop seeds or of weed seeds are especially abundant it may be desirable to keep them separate from the rest in order to determine their quantity, but if not the foreign matter for convenience may be mixed together irrespective of its character. In official tests the foreign seed and the inert matter are separated, their quantities being determined individually. After the pure seed and the foreign materials of the sample have been separated the proportion of pure seed is determined by comparing its weight with that of the entire sample, expressing the result in per cent. If quantities of seed weighing 6¼ shots or 12½ shots have been taken for the original test sample, each 1-16 shot weight of pure seed represents 1 per cent or one-half of 1 per cent, respectively.

Determination of adulterants.—When an adulterant is found and its kind ascertained by examination, its quantity must be determined. When such seed as that of trefoil, sweet clover, Canada bluegrass, and other kinds have been used, their separation from all the pure seed of a test sample is laborious and not justified by the information gained. Since the weight of these seeds is approximately the same as that of the seeds with which they are mixed, their relative proportion to pure seed is determined by count. After all other foreign seeds and other materials have been separated from the pure seed and adulterant together 1,000 seeds of the mixed crop seed and adulterant are counted out indiscriminately. This number of seeds is then carefully separated into pure-crop seed and adulterant and the number of each ascertained by actual count. If a sample of red clover seed is found to be adulterated with trefoil to the extent of 400 seeds in 1,000 seeds of the mixture, the trefoil is determined to be 400 divided by 1,000 equals 40 per cent of the mixture. If other foreign matter in the sample amounts to 15 per cent, the clover and trefoil mixture represents 85 per cent of the original sample. The trefoil adulterant therefore amounts to 40 per cent of 85 per cent, or 34 per cent of the seed under test.

Examination of weed seeds.—The weed seeds should be examined for kinds representing important weeds. A knowledge of what important weed seeds are liable to occur in particular kinds of crop seed is very helpful. For this reason the results of many tests are utilized in the subsequent remarks on testing particular kinds of seed. Suspected weed seeds should be carefully compared with the illustrations relating to this class of seeds. Many kinds of weed seeds not illustrated in this bulletin will be found. Most of these, as a rule, are of relatively minor importance.

The germination test.—It is important in separating pure seed for the germination test that the counting be done indiscriminately—without selection as to the appearance of the seed. The tendency of the beginner is to select the more promising looking seeds for the germination test. It must not be forgotten that the purpose of the test is to learn what percentage of the total pure seed will germinate. If the more promising seed is selected, the results of the test are deciving in favor of the dealer.

Of small seeds (such as forage crop and cereals), 200 are counted; of larger seeds 100 are taken, each in duplicate. In the special individual ear tests of corn only a few seeds are used. In adulterated samples the necessary number of pure seeds can usually be obtained from the separation of the 1,000 seeds. It is obvious that accurate counting is important to insure accuracy in computing the result.

The conditions essential to seed germination are sufficient moisture, warmth, and air. Sufficient water should be supplied to keep the seeds thoroughly moisted during germination, but they should not be allowed to rest in water. The temperature of living rooms ranging rfom 65° to 85° F. is suitable for germination. A place in the room should be selected where the day and the night temperatures will be fairly uniform. Thus the window sill is too cold in winter and a shelf directly over the stove is too warm. The germination of some kinds of seeds is favored by the varying day and night temperature of living rooms. Germinating seeds must be supplied with fresh air. If the air is confined, it loses its oxygen, which is necessary to germination, and there is no means for escape of carbon dioxid, a gas produced by the germination process but detrimental to it. A proper covering of cloth, paper, wood, or glass for the seed germinator which prevents too rapid loss of moisture by evaporation, while not hindering the admission of air, should not be neglected. In order to insure sufficient air, very small seeds germinate best on top of the germinator cloth or paper, while larger seeds do better when placed between cloth or paper folds.

When sand or soil is used in testing germination, the seeds should have but a very light covering. Before the sprouts appear the surface of the sand may be kept covered to hold the moisture. Germination in sand and in soil is likely to be somewhat slower than when the test is made in cloth or paper.

Seed in the germinator should be examined daily to note the extent and vigor of germination. Weak, slow germination indicates low vitality, unpromising for good field results in plant production.

Red clover and alfalfa seed are sometimes so slow in absorbing moisture that the germination is delayed several days or even several weeks. This is particularly true of new seed. The same seed a year later may show a greatly reduced amount of this so-called "hard seed" and therefore a higher percentage of germination under test. Such seed remains hard in the test when other seed has become soft by the absorption of water.

The time required for germination differs with different kinds of seed. Between the times of appearance of the first and the last sprouts there is a period of maximum germination when the practical germinating value of the seed is evident.

Determining the actual value of the seed.—The actual value of the pure, germinable seed in a sample depends on its quantity, as compared with the total weight of the sample. Assuming, for illustration, a standard of absolute purity and viability in seed selling at $10 per 100 pounds, such seed is actually worth, at this rate, 10 cents per pound. On the other hand, seed selling at the same price, but on test showing a purity of 80 per cent and viability of 70 per cent, contains but 70 per cent of 80 per cent, or 56 per cent of pure, viable seed. At $10 per 100 pounds of this seed as sold the good seed actually costs nearly 18 cents per pound.

This ideal state of perfection in purity and viability of seed is rarely, if ever, attained. It is important, however, to know the highest quality that seed can justly be expected to show. It is fair that the best seed that is marketed should serve as a guide in this respect, because the average results of miscellaneous tests of any particular kind are too low, since some samples are altogether too low in quality. The fact that seed of the prinicipal forage crops in which both the purity and the viability closely approach 100 per cent does appear on the market justifies one in assuming that all seed of these crops sold as high grade should possess equally good quality.

The practical application of this understanding as to quality may sometimes admit of due allowance. For example, clover seed is sometimes sold locally in the chaff. If such seed is known to be free from noxious weed seeds, it can safely be purchased if proper allowance be made for the proportion of worthless chaff and undeveloped seed. An average sample of the chaffy seed may be weighed and its percentage of good seed ascertained. Since clover seed weighs 60 pounds per bushel, the actual value of such chaffy seed can readily be determined, the price regulated, and the quantity to be sown accurately gauged.

The actual proportion of pure, viable seed in a sample is represented by the product of its percentages of purity, a viability expressed in per cent.

TESTING PARTICULAR KINDS OF SEEDS.

GENERAL CONSIDERATIONS.

The work of seed testing is greatly facilitated by a general knowledge of the conditions more or less peculiar to the seed of particular kinds of crops. For illustration, the adulterants used with different kinds of seeds differ in kind; the conditions of culture, of harvesting, and of preparation for market tend to influence the condition of the seed; the kind and source of the seed influence the character of its impurities. Kinds of seed supplied to the market from both domestic and foreign grown stocks should be considered with reference to their source. The significance of the kinds of weed seeds as indicating the source of the seed is at present chiefly applicable to the seed of the clovers and alfalfa.

In the following remarks on the testing of particular kinds of seeds it is assumed that the previously discussed methods of making seed tests in general will be borne in mind, leaving the present discussion to relate chiefly to conditions peculiar to the several kinds of seeds considered. To avoid repetition, it may be stated that for the test sample of clovers, alfalfa, and medium-seeded grasses seed equaling 12½ BB shots in weight may be taken; of the smaller seeded redtop and blue-grasses half this weight, equal to 6¼ BB shots, will suffice; of coarse seeds (as oats, barley, vetch, etc.), double the weight of 12½ BB shots may be used. Several subdivisions of the larger sample may thus be required to segregate the small test sample. A little care will insure accuracy in weighing the test sample.

TESTING RED CLOVER SEED.

The yellow and violet colors of the seed, together with the triangular form of individual seeds, distinguish fresh red clover seed. (See fig. 22.) Old seeds are dull and reddish brown. Imperfectly developed seeds are dull brown and more or less shriveled. Empty perforated seed shells in light screenings show the work of the clover seed chalcisfly. No evidence of the so-called clover seed midge is ever present in seed. Note should be made of the apparent relative quantity of poor true clover seed in the sample.

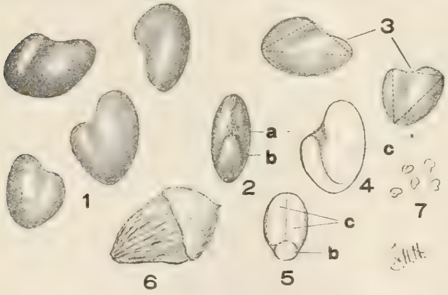


Fig. 22.—Seeds of red clover: **1**, Side view and, **2**, edge view of seeds; **3**, the triangular form indicated; **4**, a seed cut lengthwise; **5**, a seed cut crosswise, showing the embryo; **a**, seed scar; **b**, stemlet (radicle) of the embryo; **c**, seed leaves (cotyledons) of the embryo; **6**, a pod of red clover; **7**, natural size of seeds.

Consider the matter of intentional adulteration by the use of (1) old red clover seed which is sometimes disguised by oiling and polishing, but which will be disclosed in the germination test; (2) yellow trefoil seed (figs. 3 and 23);

and (3) miscellaneous screenings consisting of shriveled clover seed and weed seeds, or of very small red clover seed indicating foreign production.

Separate all true red clover seed, together with yellow trefoil present in quantity sufficient to indicate intentional adulteration, from all weed seeds and other materials.

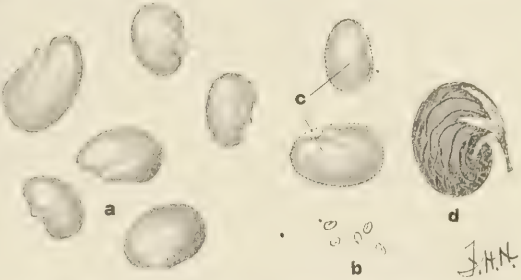


Fig. 23.—Seeds of yellow trefoil; **a**, seeds showing variation in form and size; **b**, natural size of seeds; **c**, oval form of trefoil seeds indicated; **d**, a pod of trefoil.

If the sample is adulterated with trefoil or other specific adulterant, count out 1,000 seeds from the clover and adulterant freed from other impurities and determine the quantity of the adulterant by count.

The total quantity of true red clover seed, including shriveled seed, is the "pure seed" of the test; accurately record its weight. The percentage of true red clover seed in the test sample and in the original sample is shown by dividing this weight by the weight of the original sample, expressing the result in per cent; or, if seed equal to the weight of 12½BB shot is being tested, each 1-16 shot weight represents one-half of 1 per cent of the whole.

Count indiscriminately from the pure seed 200 seeds in duplicate for the germination test. Conduct this test as previously directed under "The germination test." Sprouting should begin the second day and be completed by the sixth day. At the completion of the sprouting, examine seeds which have not sprouted to determine whether they are hard or soft. In general, the presence of a considerable quantity of hard seed indicates that the sample is one of new seed. The hard seed may amount to 20, 30, or even 50 per cent in red clover seed 1 year old. Although such hard seed is probably all alive, it is practically worthless for seeding. Soft seeds which do not sprout may be considered as dead before the test was made. An excess of such seed indicates the use of old seed as an adulterant. The best red clover seed tests as high as 98 or 99 per cent purity and 99 per cent viability.

The foreign seeds in red clover may include other crop seeds, as alsike clover, white clover, or timothy. Note should be made of the presence, character, and quantity of such crop seed.

The weed seeds should be considered with respect to their total quantity and their character as affecting the clover crop and the land. Seeds of strictly noxious plants should be distinguished as well as those indicating the domestic or foreign source of the seed. Rural school pupils, especially, who make tests of seeds should be interested in identifying so far as possible, the kinds of all the weed seeds found.

The noxious weed seeds found in red clover seed include: Dock, black bindweed, Russian thistle, white campion, bladder campion, night-flowering catchfly, pennycress, field peppergrass, two kinds of false flax and black mustard, English charlock, Indian mustard, wild carrot, field bindweed, clover dodder, field dodder, corn gromwell, rattail plantain, buckhorn, ragweed, wild sunflower, oxeye daisy, Canada thistle, bull thistle, wild chicory.

Other weed seeds commonly found in red clover include: Crab-grass, witch-grass, yellow foxtail, green foxtail, velvet grass, sedge, sorrel, knotweed, pale knotweed, lady's-thumb, lamb's-quarters, rough amaranth, spreading amaranth, wild spurry, two kinds of chickweed, mouseear chickweed, forked catchfly, creeping buttercup, peppergrass, shepherd's purse, cinquefoil, hop clover, yellow trefoil, bird's-foot trefoil, wild geraniums, stork's-bill, spurge, spiny sida, evening primrose, red pimpernel, sticktight, forget-me-not, three kinds of vervain, catmint, healall, rough-leaved toadflax, smaller broad-leaved plantain, bracted plantain, field madder, cleavers, wild corn salad, black-eyed Susan, dog fennel, field camomile, scentless camomile, cat's-ear, oxtongue, hawkweed picris.

The American or the Canadian origin of red clover seed is strongly indicated by the presence of the following weed seeds: Night-flowering catchfly, field dodder, rat-tail plantain, ragweed, bull thistle, witch-grass, lady's-thumb, spreading amaranth, peppergrass, cinquefoil, spurge, spiny sida, bracted plantain. Seeds of Canada thistle or of small-fruited false flax, if found in abundance, indicate that the source of the seed is Canadian.

European origin of red clover seed is indicated by the presence of certain weed seeds, and the occurrence of several kinds of these in the same sample (especially in the absence of the kinds heretofore mentioned as occurring in American-grown seed), lends weight to the probability of European origin, as follows: Clover dodder, wild chicory, wild spurry, chickweed, forked catchfly, bird's-foot trefoil, wild geraniums, red pimpernel, forget-me-not, vervain, field-madder, wild corn salad, scentless camomile, oxtongue, hawkweed picris. The presence of a considerable quantity of distinctly small-seeded red clover seed further indicates Eureopean origin.

TESTING ALSIKE CLOVER SEED.

Alsike clover seed is distinguished from other kinds by its dark-green color, the small size, and the heart-shaped oval form of individual seeds. The lighter colored seeds are often mottled. Old seed is distinguished from new by the dull, reddish-brown color it acquires.

White clover seed often appearing in alsike seed is distinguished by its yellowish or pinkish color.

Yellow trefoil seed, sometimes used as an adulterant and often present as an incidental impurity, is coarser than the alsike seed and is further distinguishable by its greenish-yellow or brown color and the characteristic form of individual seeds. Adulterants used other than trefoil seed are old alsike seed, timothy seed, and weedy screenings.

Germination proceeds between the second and sixth days of the test, and the viability often attains 99 per cent. Hard seed is less frequently observed in alsike seed than in red slover. The purity commonly amounts to 98 or 99 per cent.

The noxious weed seeds occurring in alsike clover seed include: Dock, white campion, bladder campion, night-flowering catch-fly, pennycress, field peppergrass, small-fruited false flax, English charlock, tumbling mustard, clover dodder, very rarely rat-tail plantain, buckhorn, ragweed, oxeye daisy, and frequently Canada thistle.

Other common weed seeds in alsike seed include: Witch-grass, yellow foxtail, green foxtail, velvet grass, sedge, sorrel, knotweed, lamb's-quarters, rough amaranth, wild spurry, chickweeds, mouse-ear chickweed, peppergrass, shepherd's purse, cinquefoil, hop clover, yellow trefoil, spurge, evening primrose, forget-me-not, vervain, catmint, healall, smaller broad-leaved plantain, bracted plantain, dog fennel, field camomile, scentless camomile.

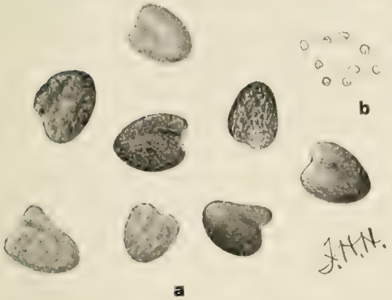


Fig. 24.—Seeds of alsike clover; **a**, Seeds showing variation in form and surface appearance, enlarged; **b**, natural size of seeds.

So little alsike clover seed is imported from Europe that weed seeds indicating European origin of seed are uncommon in this kind of seed. The examination of various samples of European seed shows, however, that the weed seeds found in European red clover seed, previously stated, are essentially the same as those appearing in alsike seed from the same source. Clover dodder is particularly noticeable in most of the samples of European alsike clover seed.

TESTING WHITE CLOVER SEED.

White clover seed resembles that of alsike clover in size and form of individual seeds, but the average size is slightly smaller. The light-yellow, pinkish, or light-brown color of white clover seed distinguishes it from the darker alsike. Adulteration is confined chiefly to the use of old seed and of weedy screenings. Much seed imported from Europe is on the American market.

The purity should attain 98 or 99 per cent, the viability 99 per cent; sprouting proceeds from the second to the sixth day.

The noxious weed seeds appearing in white clover seed include: Dock, night-flowering catchfly, pennycress, false flax, English charlock, tumbling mustard, wild carrot, clover dodder, rat-tail plantain, buckhorn, oxeye daisy, Canada thistle.

Other weed seeds commonly appearing in white clover seed are: Witch-grass, green foxtail, velvet grass, sorrel, knotweed, lady's-thumb, rough amaranth, wild spurry, chickweeds, mouse-ear chickweed, forked catchfly, peppergrass, shepherd's purse, cinquefoil, hop clover, yellow trefoil, wild geraniums, red pimpernel, forget-me-not, vervain, catmint, healall, smaller broad-leaved plantain, field madder, wild corn salad, dog fennel, field camomile, scentless camomile, hawkweed picris.

White clover seed imported from Europe is often infested with most of the kinds of weed seeds enumerated. American-grown seed may carry seeds of dock, night-flowering catchfly, false flax, English charlock, wild carrot, rat-tail plantain, buckhorn, oxeye daisy, witch-grass, green foxtail, sorrel, lamb's-quarters, etc. The absence of seeds usually found only in seed imported from Europe is mostly suggestive of the domestic origin of white clover seed.

The weed seeds fairly characteristic of European-grown white clover seed, especially when taken collectively, include: Clover dodder, wild spurry, chickweed, forked catchfly, wild geranium, red pimpernel, forget-me-not, field madder, wild corn salad, scentless camomile, hawkweed picris.

TESTING CRIMSON CLOVER SEED.

The seed of crimson clover is larger than that of the other clovers, the individual seeds being elliptical and so slightly flattened that they roll readily on a flat surface. Fresh seed is pinkish and has a bright luster. As the seed ages it becomes dull and reddish brown. The viability deteriorates rapidly.

Adulteration is confined chiefly to the use of old seed, which may usually be distinguished by its color. Considerable trefoil and red clover screenings sometimes appear. Dodder occurs only in lots containing dodder-infested red clover screenings, because the crimson clover is harvested before dodder seed matures.

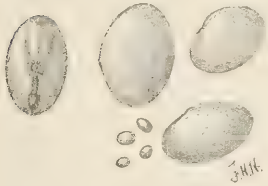


Fig. 25.—Seeds of crimson clover (enlarged and natural size.)

Most of the crimson clover seed in the American market is imported from Europe. American seed is produced chiefly in Delaware, New Jersey and Maryland. A white-seeded variety of crimson clover is imported from Europe.

The purity of this seed should be 99 per cent or higher. The viability should be 98 or 99 per cent. Very little hard seed appears in the germination test, which ranges from two to six days in duration.

The noxious weed seeds found in crimson clover seed include: Chess, darnel, dock, black bindweed, corn cockle, white campion, bladder campion, night-flowering catchfly, pennycress, field peppergrass, false flax, ball mustard, black mustard, English charlock, Indian mustard, hare's-ear mustard, wild carrot, clover dodder, field dodder, corn gromwell, rat-tail plantain, buckhorn, oxeye daisy, Canada thistle, wild chicory.

Other weed seeds commonly found in crimson clover seed include: Crab-grass, witch-grass, yellow foxtail, green foxtail, soft chess, sorrel, knotweed, pale knotweed, lamb's-quarters, wild spurry, chickweeds, forked catchfly, creeping buttercup, peppergrass, shepherd's purse, hop clover, yellow trefoil, bird's-foot trefoil, three kinds of wild geranium, stork's-bill, spurge, red pimpernel, forget-me-not, vervain, healall, rough-leaved toad-flax, smaller broad-leaved plantain, dwarf plantain, field madder, cleavers, wild corn salad, dog fennel, field camomile, scentless camomile, corn flower, cats-ear, hawkweed picris.

Crimson clover seed of domestic production is often characterized by the presence of one or more of several kinds of weed seeds, some of which are not considered in this bulletin. Two of these kinds, however, are spurge and dwarf plaintain. The absence of the kinds given in the following list affords strong indication of domestic production.

The weed seeds especially suggestive of European production include: Chickweed, forked catchfly, creeping buttercup, bird's-foot trefoil, wild geraniums, red pimpernel, forget-me-not, vervain, rough-leaved toadflax, field madder, wild corn salad, scentless camomile, hawkweed picris. The presence of white seeds of crimson clover is an additional indication of European production.

TESTING ALFALFA SEED.

Alfalfa seed is distinguishable from the clover seeds by the somewhat variable kidney-shaped form of individual seeds and by the greenish-yellow or light-brown color. Old, poorly developed, and shriveled seeds have a dull, reddish-brown color. In general the details of testing red clover seed may be followed in testing alfalfa.

Alfalfa seed is adulterated by the use of yellow trefoil, sweet clover, bur clover, light shriveled alfalfa screenings or low-grade, weedy seed.

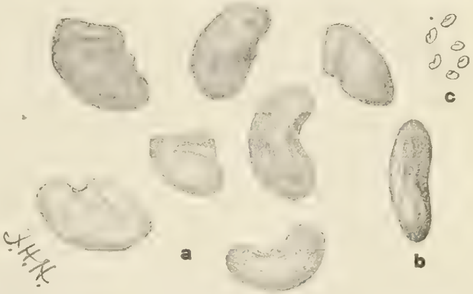


Fig. 26.—Seeds of alfalfa: **a**, Individual seeds, showing variation in form; **b**, edge view of a seed, showing the scar; **c**, natural size of seeds.

Besides giving especial attention to the matter of adulteration the question of domestic or of European production should be considered in making the purity test. Much of the seed on the market is imported and the question of domestic or foreign production often can be determined by the weed seeds present.

The purity should attain 98 or 99 per cent, the viability 97 to 99 per cent. The germination test should be completed in six days, most of the seeds sprouting during the second and third days. Considerable hard seed is often found in new seed.

The noxious weed seeds found in alfalfa seed include: Sand bur, wild oat, chess, quack-grass, dock, black bindweed, Russian thistle, corn cockle, white campion, bladder campion, night-flowering catchfly, cow cockle, pennycress, field peppergrass, false flax, black mustard, English charlock, Indian mustard, hare's-ear mustard, tumbling mustard, wild carrot, field bindweed, clover dodder, small-seeded alfalfa dodder, field dodder, large-seeded alfalfa dodder, corn gromwell, rat-tail plantain, buckhorn, ragweed, gumweed, wild sunflower, oxeye daisy, Canada thistle, bull thistle, wild chicory.

Other weed seeds commonly found in alfalfa seed include: Crab-grass, witch-grass, yellow foxtail, green foxtail, soft chess, sorrel, knotweed, pale knotweed, lady's-thumb, lamb's-quarters, wild saltbush, rough amaranth, spreading amaranth, wild spurry, chickweeds, mouse-ear chickweed, forked catchfly, creeping buttercup, peppergrass, shepherd's purse, cinquefoil, hop clover, yellow trefoil, bird's-foot trefoil, wild geraniums, spiny sida, evening primrose, red pimpernel, sticktight, vervain, catmint, healall, rough-leaved toadflax, smaller broad-leaved plantain, bracted plantain, field madder, cleavers, wild corn salad, poverty weed, dog fennel, field camomile, scentless camomile, cornflower, cat's-ear, oxtongue, hawkweed picris.

The bulk of the domestic alfalfa seed is produced in the western states and many kinds of weed seeds it carries are distinctly different from those appearing in imported seed. The weed seeds (if not associated with kinds distinctly foreign) pointing decisively to domestic production are: Sand bur, Russian thistle, cow cockle fragments, tumbling mustard, small-seeded alfalfa dodder, the form of field dodder having light colored seeds, large-seeded alfalfa dodder, ragweed, gumweed, wild sunflower, wild saltbush, spreading amaranth, spiny sida, and poverty weed.

European origin of alfalfa is indicated by the presence of the following weed seeds: White campion, wild carrot, clover dodder, wild chicory, wild spurry, chickweed, forked catchfly, creeping buttercup, bird's-foot trefoil, wild geraniums, red pimpernel, vervain, rough-leaved toadflax, field madder, wild corn salad, scentless camomile, oxtongue, hawkweed picris.

TESTING ORCHARD GRASS SEED.

Orchard grass seed should be carefully mixed before the test sample is taken, because small and relatively heavier impurities are likely to settle to the bottom of the bulk sample. Seed equal to the weight of 12½ BB shots may be taken for the test sample.

Orchard grass seed is readily identified by the slender, pointed form of the seed in the chaff. The lemma of the seed is angled on the back and is curved to one side toward the pointed apex. The seeds are three-eighths inch to one-half inch long. Some of the seeds bear the sterile chaff of a second seed.

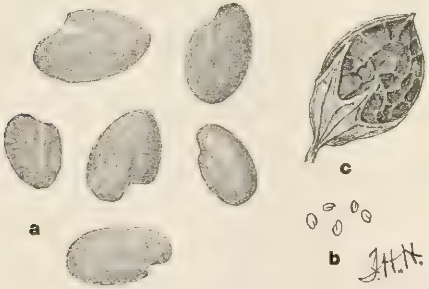


Fig. 27.—Seeds of sweet clover; **a,** Seeds showing variation in form and size; **b,** natural size of seeds; **c,** a pod of sweet clover.

Orchard grass seed is adulterated by the use of English rye-grass seed, meadow fescue seed, and orchard grass chaff. The seeds of meadow fescue and of English rye-grass are very similar. They are about the same length as the orchard grass seeds, but are flattened and broader, not curved nor slender pointed. When seen under a magnifier the two kinds may be distinguished by the difference between the rachilla segments, that of meadow fescue being slender, cylindrical and distinctly expanded at the apex; that of English rye-grass usually wedge shaped, flattened, and scarcely expanded at the apex. Both of these kinds of seed often appear as adulterants of the same lot of orchard grass seed. Orchard grass chaff may be distinguished by its light weight, sometimes to some extent by its light color and by the absence of a grain as observed by pressure.

If in making a practical test of orchard grass seed the empty, chaffy seeds freed from other chaffy material are separated from among the grain-bearing seeds the labor is greatly increased. Such chaffy seeds may better be left with the grain-bearing seeds and indiscriminately counted for the germination test, in which the true value will appear. This test requires fourteen days. New, well-cleaned seed should germinate 95 to 98 per cent. The purity should be 98 or 99 per cent.

The noxious weed seeds found in orchard grass include: Wild oat, chess, dock, including the chaffy covering, black bindweed, bladder campion, field peppergrass, tumbling mustard, rat-tail plantain, buckhorn, oxeye daisy.

Other weed seeds commonly found in orchard grass seed include: Crab-grass, witch-grass, velvet grass, soft chess, sedge, sorrel, lamb's-quarters, rough amaranth, creeping buttercup, peppergrass, wild geranium, field madder, cleavers, scentless camomile, cat's-ear.

TESTING MEADOW FESCUE SEED.

Individual meadow fescue seeds are boat-shaped, three-eights inch to one-half inch long, flattened; the lemma rounded, its apex rather bluntly pointed. The characteristic rachilla segment is slender, cylindrical and distinctly expanded at the apex.

Meadow fescue is often adulterated with seed of English rye-grass, which is almost identical in form, but may be distinguished by the rachilla segment which is usually wedge shaped, flattened and scarcely expanded at the apex. The examination of meadow fescue seed for English rye-grass as an adulterant should always be made. The extent of the adulteration may be determined by count from 1,000 seeds of the mixture as previously described.

The seed of chess has been used as an adulterant of meadow fescue seed. The chess seeds are larger, usually cylindrically folded, and sometimes have a short awn at the apex. The rachilla segment is curved and club shaped.

Meadow fescue seed usually is comparatively free from meadow fescue chaff, but very poor seed may contain chaff of orchard grass or worthless orchard grass seed. The purity should reach 99 per cent, the viability 95 to 98 per cent.

The noxious weed seeds found in meadow fescue seed include: Chess, quack-grass, dock, bladder campion, field peppergrass, small-fruited false flax, English charlock and buckhorn.

Other weed seeds found in meadow fescue seed include: Crab-grass, witch-grass, yellow foxtail, green foxtail, velvet grass, soft chess, sedge, sorrel, lady's-thumb, lamb's-quarters, wild spurry, creeping buttercup, peppergrass, yellow trefoil, forget-me-not, bracted plantain, field madder, cat's-ear, hawkweed.

TESTING TIMOTHY SEED.

Timothy seed is as a rule, very pure, and not subject to adulteration other than by the use of old seed. Tests of this seed are easily made.

After thorough mixing, a quantity of seed equaling the weight of 6¼ BB shots, at least, should be taken for the test sample. Timothy seed is readily identified. It appears both in the chaff and as free grains. Seed in the chaff should have a silvery-white appearance. Free grains are slightly darker and dull. If they are brown a damaged condition is suggested. The purity should be 99 per cent or higher; the viability 98 or 99 per cent. The germination test requires five or six days. In addition to the weed seeds found in timothy some lots contain Kentucky bluegrass seed and Canada bluegrass seed and alsike clover seed.

The noxious weed seeds found in timothy include: Dock, bladder campion, night-flowering catchfly, small-fruited false flax, rat-tail plantain, buckhorn, Canada thistle. European timothy seed is said to sometimes contain clover dodder, probably due to its being grown with dodder-infested clover. This dodder does not occur in American or Canadian timothy seed. The most serious impurity is Canada thistle seed found in Canadian-grown timothy.

Other weed seeds occuring in timothy seed include: Witch-grass, yellow foxtail, green foxtail, sedge, sorrel, lady's-thumb, lamb's-quarters, mouse-ear chickweed, peppergrass, shepherd's purse, cinquefoil, yellow trefoil, evening primrose, catmint, smaller broad-leaved plantain, dog fennel, field camomile.

TESTING KENTUCKY BLUEGRASS SEED.

The Kentucky bluegrass seed in the American market is produced in this country, chiefly in Kentucky. Seed in bulk has a brownish-straw color. Individual seeds are canoe shaped, approximately three thirty-seconds of an inch long, the back of the lemma being sharply angled. A slender ridge on each side of the angle of the lemma is usually evident.

The chief points to be considered in testing Kentucky bluegrass seed are the presence of Canada bluegrass seed as an adulterant and the presence of an undue amount of chaff or of dead seed.

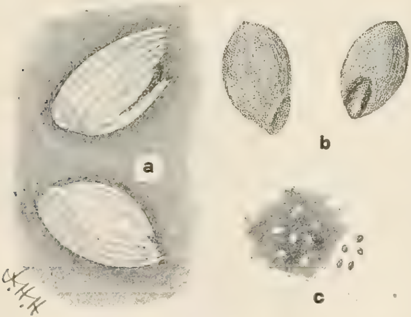


FIG. 28.—Seeds of timothy; **a.** Grains in the hull, or chaff; **b.** grains removed from the chaff; **c.** the same, natural size.

Canada bluegrass seed has been employed in large quantities as an adulterant of or a substitute for Kentucky bluegrass seed. Its seed is very similar to the latter, but can be distinguished by means of a magnifier. In general Canada bluegrass seed in bulk has a somewhat lighter color. Its individual seeds are broader, more blunt and papery at the apex, and the sides of the lemma are devoid of the ridges which are distinct in seeds of Kentucky bluegrass seeds. The extent of adulteration is determined from 1,000 seeds of the mixture counted indiscriminately.

Since it is difficult to remove all the sterile chaff from seeds containing a grain, it will suffice in making practical tests to remove the lightest chaff, pieces of stems, leaves, etc. as inert matter, endeavoring to leave all the grain-bearing seeds with the pure seed, which by this method will contain also some empty, or sterile, seeds. The pure seed and chaff are separated by placing the weighed sample, a little at a time, on a smooth cardboard tray and pouring it into another tray, allowing the seeds to roll across the face of the tray. The light chaff is held behind while the heavier grain-bearing seeds roll off. Carefully repeating the operation two or three times effects a very satisfactory separation. After removing the foreign seeds, the seeds (200 in duplicate) for the germination test are to be counted out from the "pure seed" separation, the chaffy and grain-bearing seeds being taken indiscriminately.

Kentucky bluegrass seed should be comparatively free from chaff, but the methods of cleaning in use leave from 10 to 20 per cent or more of chaff with the pure seed. Some samples show the purity ranging from 80 to 85 per cent but most tests range from 70 to 80 per cent and may fall much lower. The viability ranges from 80 to 90 per cent in the best samples, but most tests range from 65 to 80 per cent and many fall lower. The method of making the purity test given here tends to give higher purity and lower viability than more carefully made official tests. The most of the sprouts appear within nine or ten days, others appearing from time to time until the twenty-eighth day. Only a very light covering, if any, should be placed over the seeds. It is better that they remain uncovered on the cloth or paper if the inverted dish keeps the air about the seeds moist.

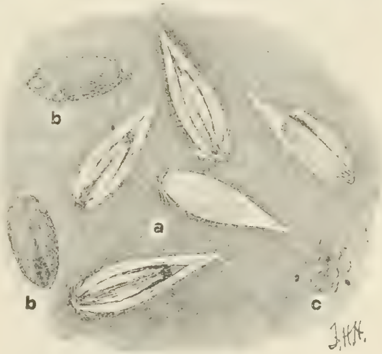


Fig. 29.—Seeds of redtop representing the "fancy" (or "solid") grade of the trade; **a,** Different views of seeds having the white, papery, inner chaff; **b,** two views of a grain, or kernel, with the inner chaff removed; **c,** the same, natural size.

The noxious weed seeds found in Kentucky bluegrass seed include: Dock, small-fruited false flax, corn gromwell, rat-tail plantain, buckhorn, also Canada thistle when mixed with Canada bluegrass.

Other weed seeds found in Kentucky bluegrass seed include: Sedge, sorrel, lamb's-quarters, mouse-ear chickweed, peppergrass, shepherd's purse, cinquefoil, dog fennel, cat's-ear, hawkweed.

TESTING REDTOP SEED.

In testing redtop seed it should be borne in mind that three grades of this seed are offered in the trade under the names (1) "recleaned" or "solid" seed, (2) "unhulled," and (3) "chaff" seed. The application of these terms becomes evident when the structure of the seed is considered. The recleaned or solid seed consists of a mixture of free grains and grains covered by the silvery, papery inner chaff. This is the best matured, purest, and heaviest of the grades of redtop. The unhulled grade consists chiefly of seed inclosed in the outer chaff. This seed is generally more immature than the first grade. It also is lighter and lower in purity than the other. Chaff redtop is a very variable grade consisting largely or almost entirely of empty chaff scales and pieces of stems, leaves, and other inert materials. Many samples of chaff redtop contain very little solid seed.

The recleaned grade is usually comparatively free from impurities, but sometimes contains timothy to the extent of severe adulteration and so should be tested in this respect.

In making a practical test of the unhulled and chaff grades of redtop, the lightest chaff may be blown carefully from the heaviest seed of a quantity of seed of known weight. Some seeds will retain the inclosing outer chaff. Slight rubbing will loosen this outer chaff, when it, too, may be blown away, leaving the pure seed in essentially the same condition as shown in the recleaned grade. This seed, after removing the ergot, timothy, and other foreign seeds, may then be weighed and its quantity compared with the quantity of the original test sample. Such a comparison sometimes shows a surprisingly small quantity of true seed in chaffy grades.

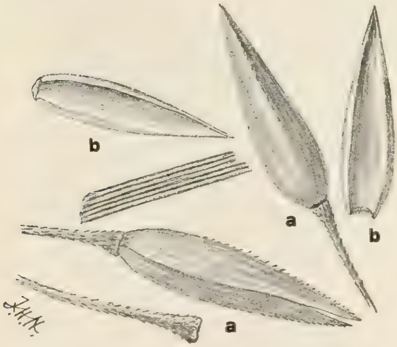


Fig. 30.—Chaff of redtop seed; **a**, Whole spikelets usually devoid of seed in "chaffy" grades; **b**, separated scales of the same; **a** and **b** represent the outer chaff of the seed. (Enlarged.)

The purity of commercial redtop seed is evidently dependent on the trade grade and the extent to which the grades are cleaned. The solid or recleaned grade should show a purity of 95 to 98 per cent. The germination should be as high. The unhulled grade is more variable both as to purity and viability. The purity is influenced by the widely variable quantity of broken leaves, ergot, and loose chaff, and the viability varies because of the practically worthless immature and undeveloped grains which constitute a variable proportion of this grade of seed.

The noxious weed seeds found in redtop (chiefly in the chaffy grades) include: Dock, tumbling mustard, rat-tail plantain, buckhorn, oxeye daisy.

The commoner of the other weed seeds found in redtop seed include: Crab-grass, witch-grass, sedge, lamb's quarters, chickweed, peppergrass, shepherd's purse, cinquefoil, black-eyed Susan, dog fennel, field camomile.

TESTING AWNLESS BROME-GRASS SEED.

Both domestic and imported seed of awnless brome-grass (*Bromus inermis*) is in the American market. This seed should be readily recognized by its large size and thin, boat-shaped form and the light-brown color of the individual seeds. The large, thin, dark-brown grain of the seed is easily distinguished through the papery palea.

Adulteration of awnless brome-grass seed consists in the use of seed of meadow fescue and of English rye-grass. The seed of chess, or cheat, sometimes passes in the trade as awnless brome-grass seed. These two kinds of seed are closely related botanically, but they are readily distinguishable under careful observation.

One objection to the use of brome-grass seed imported from Europe is that it carries the seed of quack-grass. Unfortunately in respect to popular seed testing, awnless brome-grass seed produced in the northwestern states and in Canada may carry seed of wheat-grass which is so similar to that of quack-grass that the layman is not likely to distinguish them with certainty.

The number of kinds of weed seeds carried by awnless brome-grass seed is comparatively small, but some of them are very undesirable.

Awnless brome-grass seed should show purity of 98 or 99 per cent and viability of 90 to 95 per cent in fourteen days.

The noxious weed seeds found in this seed include: Wild oat, chess, quack-grass, black bindweed, pennycress, field peppergrass, large-fruited false flax, and field bindweed.

Other weed seeds sometimes appearing in awnless brome-grass seed include: Soft chess, lady's-thumb, lamb's quarters, rough amaranth, yellow trefoil, sticktight, cleavers.

Eureopean origin of awnless brome-grass seed is strongly suggested by the presence of seeds of quack-grass, false flax, field bindweed, and soft chess.

TESTING SEED OF MILLETS.

The millets used as forage crops in this country represent three distinct kinds of grasses—the broom-corn, or grain, millets, the foxtail mil-

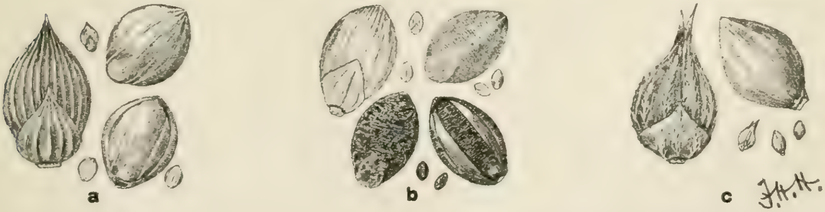


Fig. 31.—Seeds representing the three groups of millets; **a,** Broom-corn millet; **b,** foxtail millets, including the German, common, and Hungarian varieties; **c,** barnyard and Japanese millets. (Enlarged and natural size.)

lets (German, common, and Hungarian) and the barnyard and Japanese millets. The seed test should show which kind is involved.

Seeds of the broom-corn millets are mostly free from the brown, papery, loose-fitting chaff; they are broadly oval, robust, highly polished, shining, and tend to roll readily on a plane surface. The color varies in different varieties and includes straw-color, light yellow, orange, gray, and dark brown.

Seed of the foxtail millets appears both with and without the thin, whitish, outer chaff, most of the seeds being free from it. With the outer chaff removed, the seeds present a finely roughened, or stippled, surface which has a slight luster. German millet seeds usually are broadly oval, robust; they roll readily and are commonly orange colored. Common millet seeds are oval, but relatively longer in proportion to their width than seeds of German millet; yellowish or greenish in color. Hungarian millet seed consists of a mixture of yellow or golden colored seeds and of dark-purple seeds. The darker seeds are often mottled. Seeds of the foxtail millets, particularly those of common millet, are distinguishable from the similar seeds of the weed, green foxtail, by their slightly larger size and more polished surface.

Seed of barnyard millet including that of Japanese millet is chiefly inclosed in the light-brown or dark-brown, hairy, sharp-pointed outer chaff. With this chaff removed, the seed is oval, whitish or gray, smooth, and polished, plano-convex, the convex face strongly arched.

The purity of all the millets should reach 99 per cent, the viability 95 per cent or higher in three to five days.

Much of the seed of all the millets used in this country, excepting possibly the common barnyard millet, is imported, and many kinds of injurious weeds are thus introduced. This is particularly true of the broom-corn and foxtail millets. About the same kinds of weed seeds are carried by each.

The noxious weed seeds found in broom-corn millet include: Dock, black bindweed, corn cockle, night-flowering catchfly, cow cockle, penny-cress, ball mustard, English charlock, Indian mustard hare's ear mustard, tumbling mustard, field bindweed, corn gromwell, rat tail plantain, buckhorn, wild sunflower, Canada thistle, wild chicory.

Other weed seeds comonly found in broom-corn millet include: Crab-grass, yellow foxtail, green foxtail, soft chess, sorrel, knotweed, pale knotweed, lady's-thumb, lamb's-quarters, rough amaranth, spreading amaranth, wild spurry, creeping buttercup, red pimpernel, sticktight, vervain, healall, cleavers, dog fennel, field camomile.

TESTING SEED WHEAT.

A practical test of seed wheat may be made in which the points to be considered are the quantity of shriveled, or "pinched," grains, the presence of bunt, the quantity and character of the weed seeds, and the viability of the plump grains.

After thorough mixing of the bulk sample, a quantity of seeds equaling the weight of 12½ or even 25 BB shots may be taken for the test sample.

This should be separated into plump, well-filled, large grains and shriveled, small grains.

While making this separation the presence or absence of bunt, or diseased grains, should be noted. Such grains are somewhat above the average size of the best grains, brown in color, soft, and show a blackened interior when broken open. Seed fit for sowing should be plump and well filled; it should show at least 99 per cent purity and 99 per cent viability in three days and be free from bunt.

The noxious weed seeds found in wheat include: Wild oat, chess, darnel, quack-grass, dock, black bindweed, Russian thistle, corn cockle, cow cockle, pennycress, field peppergrass, false flax, ball mustard, black mustard, English charlock, Indian mustard, hares ear mustard, tumbling mustard, field bindweed, corn gromwell, ragweed, the similar (but larger) seeds of giant ragweed, wild sunflower, Canada thistle, bull thistle, and the whitish or pinkish bulblets of wild garlic which are sometimes very abundant in wheat grown in the eastern states.

Other weed seeds occurring in wheat include many of those found in forage-crop seeds. This is particularly true of wheat which has been poorly cleaned.

A test of a poor grade of wheat along the lines suggested should convince any farmer of the value of the fanning mills and suitable screens used in grading seed wheat.

TESTING SEED OATS AND BARLEY.

Seed of oats and barley may be tested in general as outlined for wheat. In testing oats especial attention should be given to the possible presence of seed of wild oat, which can be recognized by its brown color, the brown hairs at the base of the seed, the bent awn at the back, and especially by the expanded, cup-shaped scar at the base of the seed.

The purity of oats and barley should reach 99 per cent, the viability at least 95 per cent for oats and 98 or 99 per cent for barley.

In general the weed seeds appearing in wheat may be expected to appear in poorly cleaned oats and barley.

TESTING FLAX SEED.

Properly cleaned flax seed should be practically free from impurities, thus showing a purity of nearly 100 per cent. The viability should reach 99 per cent or higher in two or three days. Both domestic and imported seed are in the market. Poorly cleaned grades contain many kinds of weed seeds which, in general, include most of those found in millet seed and in wheat. In a test of flax seed especial attention should be given to the discovery of seed of flax dodder. Some of these dodder seeds are double and thus fail to pass a sieve which will remove most of the single seeds. Fairly well-cleaned lots of flax seed are thus likely to contain these double seeds of dodder. Much of the imported flax seed contains seed of flax dodder. The very destructive nature of this dodder justifies every effort to prevent the introduction of its seed. Seed of false flax is a common noxious impurity which should be avoided.

TESTING WINTER RAPE SEED.

Popular tests of rape seed are not likely to be wholly satisfactory because of the difficulty in identifying with certainty the seeds of the different kinds of rape and the closely allied mustard weeds. Seed of the more important winter, or Essex, rape may generally be recognized by the relatively large size of the individual seeds (somewhat larger than those of summer rape or of turnip), by their steel-black color, and their roundness, allowing them to roll readily on a plane surface. Summer rape seeds are mostly smaller, consisting of a mixture of black and reddish seeds, some of the black seeds being distinctly pitted, or nearly all the seeds reddish. Some lots of seed, particularly of summer rape, are adulterated with seed of English charlock. As a rule the charlock seeds may be distinguished by their smaller size, more nearly spherical form, their smoother surface and by the presence of mature reddish or brown seeds with the black ones. Some lots of rape seed are heavily adulterated with seed of Indian mustard. These seeds are readily recognized by their uniformly reddish-brown color and by the netted or pitted surface as seen under a magnifier. The purity of winter rape should be 99 per cent or higher, the viability as high under a test of two or three days' duration. A miscellaneous series of weed seeds, most of which are previously described and figured, is likely to appear in poorly cleaned grades of rape seed, particularly the summer variety.

TESTING VETCH SEED.

A popular test of vetch seed consists chiefly in distinguishing the seed of hairy (winter) vetch and that of spring vetch, and determining the viability.

Winter vetch seed consists of nearly spherical, steel-black seeds showing some variation in size. The seed is distinguished from other kinds by its characteristic seed-scar which is oblong-oval with a whitish slit through the center. A small protuberance (the chalaza) of the seed coat is located nearly the length of the scar distant from the narrower end of the scar.

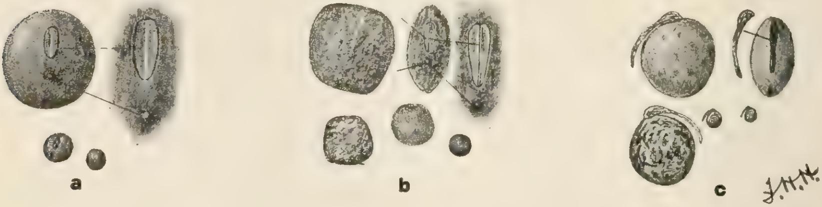


Fig. 32.—Seeds of three kinds of vetch; **a**, Winter (or hairy) vetch; **b**, spring vetch; **c**, wild vetch (Vicia hirsuta). (Enlarged and natural size.)

Seeds of spring vetch represent several varieties and thus are variable in size, form and surface. The characteristic scar is wedge shaped with a slender, black slit through its center, the slightly raised margins of the slit usually being light colored. The usually distinct chalaza, as a rule, is about half the length of the scar distant from the narrower end of the scar. Some seeds of spring vetch are large, compressed, and somewhat angular; others are nearly spherical and smaller. The surface is black, brown, gray, or mottled. In one variety, a common impurity of winter vetch seed, the seeds are spherical, jet-black, and about the size of the smaller winter vetch seeds. Only careful examination under a magnifier discloses their darker color and characteristic scar in which, however, the margins of the scar slit are black. In testing seed of winter vetch the seeds of this variety of spring vetch should be sought especially. Seeds of other varieties of spring vetch are usually distinguishable from winter vetch seeds by their different form or color.

Various weed seeds, mostly of the class appearing in seed of millets and cereal grains, are sometimes present in poorly cleaned vetch seed. The seed of a wild species of vetch (*Vicia hirsuta* (L.) Koch,) is a common impurity of cultivated vetch seed.

Vetch seed should show nearly 100 per cent purity. The viability of commercial seed is variable and is strongly influenced by the hard seed, especially in the case of winter vetch in which the hard seed may amount to 30 per cent or more. In spring vetch the hard seed usually varies between 5 and 15 per cent. The sprouting of the hard seed is hastened in the test by cutting through the seed coat with a knife blade, thus admitting moisture. The coat should not be cut in the vicinity of the seed scar lest the embryo be injured.

The germinable seed in high-grade lots of commercial winter vetch seed, together with the variable quantity of hard seed, ranges from 95 to 98 per cent. Some lots germinate between the second and sixth days; others during the second week of the test.

In spring vetch viability of 95 to 98 per cent is less commonly reduced by the hard seed. Sprouting takes place chiefly between the third and fifth days.

TESTING SEED CORN.

The testing of seed corn so far as it corresponds to the tests applied to seed of other crops consists chiefly of the germination test, showing how much of the seed will germinate and with what vigor. Assuming that the corn to be used for seed is in the ear and has been selected with reference to variety and in conformity with the recognized type of ear and of kernel best adapted for crop production, it remains to test its viability.

The two types of germinator adapted for this work have already been referred to. After removing sufficient of the butt and tip kernels of the ear to leave on the cob kernels of uniform size, 6 kernels are removed for test. Of these, 2 are taken from near the butt, 2 from the middle, and 2 from near the tip. Each pair of kernels should be taken from opposite rows, these rows being one-third of the circumference of the ear apart. In this way fairly representative kernels of the ear are chosen. The kernels are placed side by side, germ side uppermost, in the marked squares of the germinator which are numbered serially, the ears furnishing the kernels for the squares being numbered correspondingly. This is an individual ear test. Every seed should germinate, thus showing viability of 100 per cent. If any of the kernels of an ear fail to germinate, that ear should be discarded. If the germination for any ear is weak, producing inferior sprouts or is unduly slow, the ear should be rejected. The character of the sprouting should be apparent in five days.

SUMMARY.

(1) It is important that farm seeds be tested before they are sown.

(2) Seed testing in its essential features giving practical results can be done more easily than is generally believed.

(3) By means of a seed test the actual value of seed in question as compared with seed of the best quality can be determined and damage to the crop or the land due to noxious weed seeds can be avoided.

(4) Practical seed tests can be made with simple equipment by anyone interested in the purchase or use of seeds.

(5) It is readily possible for the farmer to make practical tests of seeds, thereby safeguarding against partial or complete loss of crops.

(6) Seed testing is admirably adapted for practical exercise work in elementary agriculture in rural schools.

(7) The essential preparation for making seed tests consists of providing the simple apparatus necessary and of becoming familiar with the general purposes and methods of testing and the features of importance peculiar to tests of particular kinds of seeds.

STATEMENT OF COUNTY FARMERS' INSTITUTES IN IOWA

FOR FISCAL YEAR JUNE 30, 1909 TO JULY 1, 1910

Number	Counties	Number sessions	Total attendance	RECEIPTS Cash on hand	Miscellaneous receipts	State aid	Total receipts	DISBURSEMENTS Speakers and judges	Prem ums	Miscellaneous expenses	Total dis-bursements	Balance on hand	Overdraft	Number
1	Adair	6	1,000		$ 19.84	$ 75.00	$ 94.84	$ 57.50	$ 49.25	$ 89.45	$ 196.20		$ 101.36	1
2	Adams	2	200			44.60	44.60	22.00		22.60	41.60			2
3	Allamakee	5	2,000		88.00	74.75	162.75	21.95		52.80	71.75	88.00		3
4	Appanoose	8	2,000	$ 13.00	201.00	75.00	289.00	23.87	140.50	72.41	236.78	48.78		4
5	Black Hawk	10	1,500			75.00	75.00	16.10		58.90	75.00			5
6	Boone	7	3,100		109.05	75.00	184.05	35.07	91.00	54.00	180.07	3.98		6
7	Bremer	9	1,865		131.75	75.00	206.75	82.00	38.50	86.25	206.75			7
8	Buchanan	5	1,500			75.00	75.00	30.20		44.80	75.00			8
9	Buena Vista	6	1,300	7.10	106.75	75.00	188.85	46.47	85.50	755.30	1,247.99	153.33		9
10	Butler	18	5,000		1,326.32	75.00	1,401.32	407.19	22.00	100.48	168.95	19.90		10
11	Calhoun	8	800	75.50	121.00	75.00	271.50	43.21	150.00	48.20	241.41	30.09		11
12	Carroll	4	800		45.00	75.00	120.00	43.00	39.75	23.00	105.75	14.25		12
13	Cedar	5	800	28.35	11.20	72.25	111.80	25.00	28.00	19.25	72.25	39.55		13
14	Cerro Gordo	8	720		4.00	75.00	79.00	10.50	18.75	49.75	79.00			14
15	Cherokee	15	3,745	247.03	291.30	75.00	613.33	127.90	126.00	254.60	508.50	101.83		15
16	Chickasaw	16	1,790	36.83	211.98	75.00	323.31	100.11	50.50	128.30	278.91	44.40		16
17	Clay	7	1,600		81.50	75.00	159.50	27.91	24.00	100.60	152.51	6.99		17
18	Clayton	5	400			57.39	57.39	26.35		31.04	57.39			18
19	Clinton	5	600	13.08		75.00	88.08	23.00		54.50	77.50	10.58		19
20	Dallas	2	350	31.29	97.00	75.00	153.29	26.75	91.30	16.43	134.48	18.81		20
21	Decatur	2	400			40.93	40.93	9.18		31.75	40.93			21
22	Delaware	8	1,110	1.65	47.00	75.00	173.65	35.85	97.00	40.80	173.65			22
23	Dickinson	8	3,200	138.22	231.80	75.00	445.02	89.19	70.75	156.46	316.40	128.62		23
24	Dubuque	7	2,135	26.75	102.65	75.00	204.40	37.70	81.40	49.50	168.60	35.80		24
25	Franklin	3	500		55.00	75.00	130.00	10.00	62.00	40.00	112.00	18.00		25
26	Fremont	8	3,000	101.38	100.50	75.00	276.88	94.76	59.00	63.98	217.74	59.14		26
27	Greene	4	950	3.70	27.50	75.00	106.20	17.50	30.00	56.90	104.40	1.80		27
28	Grundy	5	825		41.00	75.00	116.00	52.48	38.00	25.52	116.00			28

STATEMENT OF COUNTY FARMERS' INSTITUTES IN IOWA—Continued

Number	Counties	Number sessions	Total attendance	RECEIPTS				DISBURSEMENTS				Balance on hand	Overdrafts	Number
				Cash on hand	Miscellaneous receipts	State aid	Total receipts	Speakers and judges	Premiums	Miscellaneous expense	Total disbursements			
29	Guthrie	6	3,000	----------	90.00	75.00	165.00	41.00	18.00	92.00	151.00	14.00	----------	29
30	Hamilton	4	635	7.75	107.15	48.02	162.92	29.54	75.40	12.48	117.42	45.50	----------	30
31	Hancock	4	300	1.12	16.50	75.00	92.62	41.95	12.00	21.37	75.32	17.30	----------	31
32	Hardin	7	1,000	----------	56.00	63.43	119.43	36.68	56.00	26.75	119.43	----------	----------	32
33	Harrison	6	800	8.00	70.00	75.00	153.00	34.00	36.50	67.50	138.00	15.00	----------	33
34	Howard	8	1,500	----------	----------	75.00	75.00	59.02	----------	16.30	75.32	----------	.32	34
35	Humboldt	16	1,000	----------	46.35	75.00	121.35	40.00	----------	81.35	121.35	----------	----------	35
36	Ida	7	2,100	51.54	106.00	75.00	232.54	24.34	98.25	74.71	197.30	35.24	----------	36
37	Iowa	8	1,800	----------	----------	63.22	63.22	30.50	----------	32.72	63.22	----------	----------	37
38	Jackson	5	2,550	3.75	88.00	75.00	166.75	28.94	88.00	46.06	163.00	3.75	----------	38
39	Johnson	6	600	7.00	196.25	75.00	278.25	82.55	83.00	68.15	233.70	44.55	----------	39
40	Keokuk	15	1,975	104.56	740.29	75.00	919.85	88.69	----------	607.81	696.50	223.35	----------	40
41	Kossuth	5	1,000	----------	----------	66.79	66.79	41.29	12.00	13.50	66.79	----------	----------	41
42	Lee	5	800	36.23	207.25	75.00	318.48	40.74	190.00	40.51	271.25	47.23	----------	42
43	Linn	11	2,100	87.91	77.19	75.00	240.10	44.35	5.25	66.14	115.74	124.36	----------	43
44	Louisa	8	600	----------	435.00	75.00	510.00	100.00	330.00	80.00	510.00	----------	----------	44
45	Lucas	17	1,500	6.68	----------	46.69	53.37	15.56	----------	31.13	46.69	6.68	----------	45
46	Lyon	9	600	23.00	228.58	75.00	326.58	81.00	130.00	115.45	326.45	.13	----------	46
47	Madison	4	1,500	1.27	125.00	75.00	201.27	39.71	125.00	23.05	187.76	13.51	----------	47
48	Mahaska	4	2,000	447.58	63.10	75.00	585.68	11.50	124.00	52.15	187.65	398.03	----------	48
49	Marion	4	1,000	----------	38.93	75.00	113.93	----------	78.50	85.00	163.50	----------	49.57	49
50	Marshall	6	800	----------	15.75	75.00	90.75	22.10	----------	63.50	85.60	5.15	----------	50
51	Mills	8	1,200	----------	218.83	75.00	293.83	56.68	186.00	51.15	293.83	----------	----------	51
52	Mitchell	7	1,500	----------	----------	67.51	67.51	37.36	----------	30.15	67.51	----------	----------	52
53	Monona	5	1,000	----------	41.00	75.00	116.00	43.61	37.00	6.00	86.61	29.39	----------	53
54	Monroe	7	2,500	22.80	142.20	75.00	240.00	24.00	14.00	170.60	208.60	31.40	----------	54
55	Muscatine	5	1,000	----------	40.00	75.00	115.00	45.23	42.00	32.05	119.28	----------	4.28	55
56	O'Brien	7	1,200	----------	96.85	75.00	171.85	37.40	16.50	57.95	111.85	60.00	----------	56
57	Osceola	7	1,000	21.13	28.60	75.00	124.73	53.43	15.00	51.75	120.18	4.55	----------	57
58	Page	4	2,000	----------	----------	65.00	65.00	31.51	20.00	13.49	65.00	----------	----------	58
59	Palo Alto	9	1,800	92.00	----------	29.50	121.50	15.00	----------	14.50	29.50	92.00	----------	59

60	Pocahontas	8	3,600	150.00	67.75	75.00	292.75	69.05	50.50	121.69	241.24	51.51	----------	60
61	Polk	5	1,000	21.00	231.00	75.00	327.00	30.00	210.00	23.00	263.00	64.00	----------	61
62	Poweshiek	4	2,000	124.99	108.70	75.00	308.69	93.95	60.50	85.50	239.95	68.74	----------	62
63	Ringgold	8	2,000	12.00	197.27	75.00	284.27	26.00	97.00	106.32	229.32	54.95	----------	63
64	Sac	5	900	60.00	600.00	75.00	735.00	34.80	600.00	50.00	684.80	50.20	----------	64
65	Scott	5	4,000	----------	----------	75.00	75.00	40.78	34.22	----------	75.00	----------	----------	65
66	Shelby	8	500	3.58	45.00	75.00	123.58	40.00	15.00	81.65	136.65	----------	13.07	66
67	Sioux	6	400	----------	175.50	75.00	250.50	38.73	158.00	53.77	250.50	----------	----------	67
68	Story	4	450	9.90	----------	65.76	75.66	15.51	25.50	24.75	65.76	9.90	----------	68
69	Tama	4	400	15.00	----------	75.00	90.00	14.75	25.00	48.70	88.45	1.55	----------	69
70	Taylor	9	1,500	----------	1.03	75.00	76.03	63.03	----------	13.00	76.03	----------	----------	70
71	Union	7	450	----------	114.30	75.00	189.30	31.58	64.75	73.99	170.32	18.98	----------	71
72	Van Buren	21	1,450	----------	----------	73.27	73.27	9.06	----------	64.21	73.27	----------	----------	72
73	Wapello	6	650	68.48	206.38	75.00	349.86	14.55	224.60	74.80	313.95	35.91	----------	73
74	Warren	3	500	200.72	139.14	75.00	414.86	35.48	53.75	40.25	129.48	285.38	----------	74
75	Washington	7	3,500	135.15	96.00	75.00	306.15	63.00	26.00	133.59	222.59	83.56	----------	75
76	Wayne	7	2,600	37.72	94.40	75.00	207.12	34.76	47.00	57.29	139.05	68.07	----------	76
77	Winnebago	5	300	----------	39.50	75.00	114.50	75.00	11.00	28.50	114.50	----------	----------	77
78	Woodbury	7	1,000	----------	145.00	75.00	220.00	33.75	86.00	72.00	191.75	28.25	----------	78
79	Worth	4	700	----------	20.00	75.00	95.00	52.82	30.00	12.18	95.00	----------	----------	79
80	Wright	11	4,000	----------	210.50	75.00	285.50	25.00	60.50	199.29	284.79	.71	----------	80
	Total 1909-10	564	117,550	$ 2,484.24	$ 9,220.43	$ 5.754.11	$17,458.78	$ 3,662.01	$ 5,064.92	$ 6,037.32	$14,764.25	$ 2,863.13	$ 168.60	----

STATEMENT OF SHORT COURSE ASSOCIATIONS IN IOWA

FOR YEAR ENDING JUNE 30, 1910

Counties	Number sessions	Total attendance	Cash on hand	Miscellaneous receipts	State aid	Total receipts	Speakers and judges	Premiums	Miscellaneous expense	Total disbursements	Balance on hand
Black Hawk	11	3,300		$ 960.79		$ 960.79	$ 342.47	$ 232.46	$ 368.01	$ 942.94	$ 17.85
Clay	15	1,600		690.50		690.50	17.50	117.50	531.97	666.97	23.53
Emmet	15	3,750	$ 79.76	1,563.10	$ 75.00	1,717.86	328.92	640.00	415.92	1,384.84	333.02
Floyd	18	2,000		2,718.78	269.47	2,988.25	128.57	1,187.05	1,446.72	2,762.34	225.91
Henry	17	5,100	475.36	956.57	75.00	1,506.93	278.65	265.83	409.72	954.20	552.73
Ida	15	4,200		2,147.20	200.00	2,347.20	500.00	869.50	610.05	1,979.55	367.65
Jefferson	14	3,000		1,435.25	275.00	1,710.25	262.87	1,000.00	363.60	1,626.47	83.78
Mahaska	33	4,500		2,339.99		2,339.99	132.37	934.00	710.48	1,776.85	563.14
Marshall	45	5,500	200.00	2,192.60		2,392.60	283.62	850.00	928.73	2,062.35	330.25
Montgomery	17	4,500		1,782.00	275.00	2,057.00	286.00	981.95	789.05	2,057.00	
Poweshiek	15	7,590		1,215.75		1,215.75	422.34	110.00	455.58	987.92	227.83
Pottawattamie	15	2,250	13.11	1,276.82		1,289.93	73.26	41.00	1,030.67	1,144.93	145.00
Wright	5	1,400		1,072.96		1,072.96	153.04	81.00	733.00	967.04	105.92
Total	235	48,690	$ 768.23	$ 21,252.31	$ 1,169.47	$ 22,290.01	$ 3,209.61	$ 7,310.29	$ 8,793.50	$ 19,313.40	$ 2,976.61

PART XII

IOWA STATE FAIR AND EXPOSITION 1910

Press Reports and Live Stock Awards

Results in Boys' Judging and Girls' Cooking Contest

WALLACE'S FARMER.

DES MOINES, IOWA.

A week of cloudy weather, with two good rains, would have been appreciated very much more in July or in early August than during the week of the Iowa State Fair. While the attendance was large, and the financial statement will be satisfactory, it would have been much larger but for the rains and threatening weather the first of last week. Tuesday and Wednesday were ideal days for comfortable sight-seeing, the temperature being moderate and the sun hidden behind banks of clouds. But the rain Sabbath night and Monday forenoon, followed by threatening weather Tuesday and Wednesday certainly deterred many people who had planned on coming to Des Moines. However, we should be thankful that it was no worse. The Iowa fair has not suffered severely from the weather for several years. Last year the rain came Thursday, after the success of the fair was assured. Prior to that there were several very favorable fair weeks. The rain this year was not unappreciated, even though it came during fair week. It was needed to freshen the grass and mellow the ground for plowing and seeding.

The total attendance this year was 231,233, a gain of 18,663 over last year. The total receipts were $134,400.41, a gain of $14,399.19. In view of the fact that the weather was threatening throughout the week, this is a remarkable showing. Had the weather been favorable, the receipts would have easily passed the $150,000 mark. It was the most successful fair in the history of the state.

An interesting feature which was seen by a mere handful of people was the exhibition of traction plows at work. There was not sufficient available ground to permit this exhibit to be made within the fair grounds proper. The manufacturers therefore secured a thirty-acre field adjoining the grounds on the east. Unfortunately, however, this field, while near the vehicle entrance, was at some distance from the railroad and street car entrances used by practically all of the folks who came from the country, and who were interested in traction plowing. Comparatively few farmers knew such an exhibition was being made and those who learned of it and wished to see it found themselves under the necessity of paying a double admission fee, as the fair management refused to issue return passes to the grounds. The increasing use of gas and kerosene for traction power on the farm makes it desirable that some arrangement be made for showing tractors at work within the grounds. If the machinery show could be removed to the north and east, the ground it now occupies would be well adapted for the exhibition of tractors.

The exhibit of game fowl and fish, made by the Iowa Fish and Game Commissioner, attracted a vast amount of attention. It consisted of a few geese, ducks and pheasants enclosed by woven wire. It was not much of an exhibit in itself, but it was different from anything ever before shown on the grounds, and the enclosure was surrounded constantly by large crowds. Three small, shallow ponds had been stocked with fish, which could be seen quite well, and proved very interesting. The fish and game department can well afford to put some money into an exhibit of this kind another year. Permanent enclosures of heavy woven wire could be constructed without a great deal of expense—very little, indeed, considering the value of the exhibit. Arrangements can no doubt be made with the Des Moines park management to secure some of the wild animals kept in the parks. A separate building should be constructed for the fish exhibit, with large glass-sided tanks, in which the fish can be clearly seen. Such an exhibit would be both interesting and instructive. The Fish and Game department has about $100,000 each year from hunters' licenses. Here is a good place to use some of it.

On Thursday, Mr. Van Pelt, state dairy expert, gave a demonstration lecture on judging dairy cattle. It is much to be regretted that so few heard this lecture. It was not well advertised, and the place and hour were not known. If, say, one hour each day was devoted to lectures on judging beef and dairy cattle, horses, sheep, hogs, etc., giving the demonstrations in the live stock pavilion, where they could be seen by the thousands of people comfortably seated, the educational value of the live stock exhibit would be very much enhanced. Comparatively few of the thousands who witness the judging of the stock get much benefit aside from the opportunity to see the stock. They can not get close enough to understand the work of the judge or to make comparisons between the animals. There is no remedy for this in a show of this magnitude, but daily lectures as suggested would add much to the interest and value of the stock exhibit.

A valuable departure which attracted much attention was the individual farm exhibits. Entries were of two classes, those from farms over eighty acres, and those under eighty. All the exhibits were tastefully arranged and furnished great variety, showing the wonderful range of products which the Iowa farm can produce. The farm exhibit feature is a step in the right direction. We hope to see it continued with even stronger competition next year. The variety of products shown, originality, taste in arranging, counted largely in the awards.

The Agricultural College presented in what was formerly the woman's rest building a very interesting and instructive exhibit. Thousands of Iowa's farmers had impressed on them in a way impossible to forget many truths of the gospel of good farming. All were much interested in the Iowa soil map; each delighted to find whether he lived in Wisconsin drift, Missouri loess, Iowa drift, or what not. Picture representations were made of all sides of farm life—farm crops, soils, domestic economy, animal husbandry, dairying, etc. Iowa maps showed the great increase in winter wheat growing, from slightly more than a million bushels in 1904 to nearly three million in 1909. In 1904, winter wheat was confined to the southern half of the state, but the 1909 map showed winter wheat grown in nearly every county.

A graphic representation gave the advantages of fall-sown alfalfa over that sown in the spring; of drilled alfalfa over that sown broadcast; and of the inoculated over the uninoculated. A chart gave the essentials for alfalfa success as drainage, seed bed, manure and inoculation, fall seeding and drilling. On another side of the same booth were samples of different varieties of oats, giving date ripe, percentage lodged, yield, and weight per bushel of each variety. The next booth contained object lessons in crop rotation and manuring. There were two bales of clover hay, 2.65 bushels of corn and a sack of 19.5 pounds of oats, all of which actual experiment has shown resulted from the application of one ton of manure. A chart made from corn kernels presented the fact that a five-year rotation with manure gave a yield of corn ranging from 33 to 55 bushels, while a five-year rotation without manure gave a yield ranging from 37 to 21 bushels, and continuous dropping from 31 to 9 bushels. Another chart gave the profits from four years of straight corn farming as $84.40, but from a rotation of corn, corn, oats, and clover, as $93.90.

The Horticultural Department had samples of spray nozzles, spray pumps, spray mixtures and charts showing the great benefits resulting from spraying. Orchard heaters, which are built for the very purpose of preventing such fruitless years as the present, were on display.

The Domestic Science Department, under charge of Miss Knowles, presented samples of fireless cookers, waffle irons, etc., as well as charts illustrating the nutritive values of our common foodstuffs.

The live stock booth should have been helpful to the thoughtful feeder. There were samples of tankage, shorts, oil meal, bran, etc., etc., with percentage composition.

In the dairy booth was presented the up-to-date dairy machinery, but the Babcock tester and the scales were given a leading position. Three suggestions were given to Iowa dairymen, as weed out poor cows, feed right, breed better cows. Sanitary milk bottles, made from paraffined paper, which are used once and then thrown away, were a new feature to most observers.

The Botanical Department had a display of common Iowa weeds labeled and a large number of them growing in pots. Passing this booth such remarks as "I always wanted to know the name of that weed; now I know," were heard. Then the man in charge would give a little talk, telling the best way to get rid of that particular pest.

An Iowa silo, made of curved brick building tile, in course of construction, attracted attention. The whole exhibit presented, in a form easily to be seen and grasped, many fundamental truths which Wallaces' Farmer has been hammering at for years. In charge of each booth was an expert who made it his business to answer all questions concerning his department. Many a man will secure sufficient financial benefit from this exhibit to more than pay for the whole cost of the outing at the Iowa State Fair.

It was not expected that the fruit display would compare with that of former years. The late frosts put practically all the Iowa apple trees out of business this year. Considering the season, the exhibition of fruit was first-class. C. E. Mincer, of Fremont county, made quite a complete commercial apple display. He used smudge pots during the cold snap and claims to have the only bearing commercial orchard in Iowa this year.

The State Board of Agriculture had a very complete display of the grains and grasses of Iowa, and exhibited large charts which gave Iowa's production in dollars of the various farm crops. This exhibit was very tastefully arranged by Fred Hethershaw, of Polk county.

THE CATTLE SHOW.

On the whole, the cattle show did not surpass the high standard of last year. The Herefords were the only breed showing marked increase, both in numbers exhibited and the quality of animals shown. The Angus were up to the last year's standard, but the Short-horns were weaker, especially in the bull classes. In numbers, the Polled Durhams, Galloways, Red Polls and the dairy breeds, with the exception of the Jerseys, all were weaker than last year. Although not surpassing last year's great show in numbers, this year's exhibit was especially fine in quality.

THE SHORT-HORNS.

The Short-horn show was remarkable for the unusually large amount of prize money secured by Iowa men. Graham, Tietjen, White, Saunders, Wickersham, Hess, Burge, Martin and McMillan, all Iowa men, secured a considerable share of the prizes. Both the junior champion bull and the grand champion cow were Iowa animals.

The bull classes were not unusual, either for the quality shown or the numbers. The senior bull calf class presented the hardest fight, having twenty-one competitors. Graham, of Prairie City, Iowa, won first and fifth in this class, with beautiful red and white twins. Carpenter & Ross, with a remarkably smooth roan, pushed Graham hard for first.

The Short-horn cow classes presented stiffer competition. The aged cows were a bit patchy, but the two-year-old heifers were a beautiful class. Tietjen's Miss Marshall 2d, last year's junior champion heifer, was in great form, and won handily over Rose of Elmendorf. Miss Marshall 2d is a rare animal, a smooth roan of great width and remarkably low setness, with a very sweet head. She went over Sinnissippi Rose 2d, last year's grand champion cow, for the senior championship, and over the beautiful senior yearling heifer, Rose of Strathallan, for the grand championship.

The heifer classes were strong, both in quality and numbers. The senior heifer calf class, eighteen beautiful youngsters faced Mr. Willis. Saunders was fortunate enough to secure first and fourth on two exceedingly smooth growthy calves.

The junior heifer calf class was also strong, and again Mr. Saunders showed up prominently with first, third and fourth prizes. Mildred Snowball, the first prize winner, was an exceedingly smooth animal, with great width for a calf.

The get of sire class presented interesting competition. Tietjen's bull, Straight Marshall, had the honor of siring the four best animals. Whitehall Marshall, the old champion, had the four next best, while Cumberland's Last was third.

The work of J. Deane Willis as judge lent additional interest to the Short-horn classes. Mr. Willis has for thirty years been the leading English breeder of Short-horns. When the famous Cruickshank herd was dispersed, he secured the females, which, with his own herd, gave him the most valuable collection of breeding Short-horns in the world. His work in the judging arena was watched with the keenest interest, and was most satisfactory to the exhibitors.

THE ANGUS.

Although the exhibitors were confined entirely to Iowa men, the Angus were out in strength. In the aged bull class, Battle's' Oakville Quiet Lad was an outstanding winner. He is a massive fellow of great scale, over a ton in weight, and remarkably developed in the heart and fore-quarters. After winning in the aged class he was later made senior champion over McHenry's wonderfully blocky, strong-quartered Quality Prince, who easily won in the two-year-old class. The cow classes presented some exceptionally smooth, well-fitted individuals. The quality was remarkably uniform, and after the judge had placed them in order, the ribbon man would often have to ask as to which end of the line to begin at. McHenry won both junior champion heifer and senior champion cow, and consequently grand champion cow, on Barbara McHenry 24th, a very massive individual of fine quality and great width. The strong point of the Angus show, as usual, was its quality, but it was much the same as usual in numbers. Next year, it should be stronger than ever with additional exhibitors from outside the state.

CHAMPION ABERDEEN ANGUS COW
Iowa State Fair and Exposition, 1910

THE HEREFORD SHOW.

The Hereford show was exceptionally good this year, running a very close second to the Short-horn show in numbers. Strong competition marked every class, as the entries ran almost uniformly excellent. The outstanding bull of the show was a senior yearling belonging to Harris & Son, a wonderful growthy, massive youngster, with great smoothness.

The aged cow class presented a smooth, uniform lot of matrons. Last year's grand champion cow, Margaret, had to give way this year to McCray's Lady Fairfax 4th, a cow of unusual width and scale, but not possessing the great depth of Margaret. Lady Fairfax 4th was good enough to later become grand champion cow of the show over the junior champion, Donald Lass 4th, an extremely smooth, attractive heifer calf.

As a whole, the Hereford show ran uniformly excellent. The Iowa exhibitors, Tow, Gibbons & Sons, and Andrews & Sons, are to be congratulated on the strong showing which they made. Iowa is not a Hereford state, but she is improving right along. In several classes it was interesting to note the presence of polled Herefords of quite good quality.

POLLED DURHAMS.

The Polled Durham show was not up to standard. Miller & Sons, of Indiana, walked away with the majority of the first prizes and championships, but Messrs. Barrans, Marti, Seeley, and Williams & Son, all of Iowa, furnished considerable competition. Mr. T. K. Flynn awarded the prizes.

GALLOWAYS.

In numbers the Galloway show was weak, but in quality it was good. Straub Bros., of Nebraska, and Bales and Hechtner, of Iowa, divided the prize money between them. Prizes were awarded by Mr. E. T. Davis, well known as an Angus breeder.

THE FAT STOCK SHOW.

Although most feeders hesitate to fit their steers in prime shape for the Iowa fat stock show, this year's show was strong. Competition was keen in the breeds and grades, and when it came to the grand championship decision between all the breeds and grades there was considerable rivalry. For the first time in years a Hereford was made grand champion steer of the show.

The fat Short-horn show displayed some beautifully finished steers, but there were many which had not approached a finished condition as yet. White took champion honors with Red Wonder, a very smooth, firm-fleshed yearling. The grade Short-horns showed practically as good quality as the pure breds. Championship went to Dunwoody on a large-framed roan in exceedingly high condition.

The Hereford steers were in unusually smooth, firm flesh this year. Among the pure breds, Van Natta secured championship with a calf as smooth as an apple. Brock took championship among the grade Herefords with a yearling that afterward became grand champion.

All things considered, the Angus presented the smoothest, most uniform lot of steers, although the number shown was small. Miller and Escher & Ryan divided most of the prizes. Proud Black Cap, a firm-fleshed, high-conditioned two-year-old of Miller's, was made champion pure bred, while champion grade went to Miller on Victor, a yearling of wonderful handling quality, as Mr. Bradfute, the Angus judge later put it, the best he had ever laid hands upon.

When it came to grand championship, Messrs. Kinzer, Bradfute and Willis had a hard proposition before them. The contest soon simmered down apparently between the grades representing each of the three breeds, and each judge seemingly holding out for his own breed. There was the Short-horn two-year-old, big and in the height of condition, but he handled a bit soft; there was the Angus yearling, firm-fleshed and of wonderful quality, but lacking slightly in scale and width; and the Hereford yearling, massive and in the very flower of condition, ripe for the block, and, withal, firm of flesh and smooth. When the judges finally selected the Hereford, there was vigorous hand-clapping from some sections of the ring.

The Short-horns came back strong in the grand champion steer group, when Carpenter & Ross won first on three uniformly conditioned and smoothly finished animals.

THE DAIRY SHOW.

The dairy show was much weaker than last year, with the possible exception of the Jerseys. Of the four breeds shown, the Guernseys had a little the best of it in numbers. The Holsteins missed the presence of Barney's herd, but Mr. Kane and Mr. White, both of Iowa, furnished animals of excellent quality. The Ayrshires were equally as strong as last year, represented by one herd, that of Mr. Seitz, of Wisconsin.

It is unfortunate that in such a leading dairy state as Iowa there should be no stronger showing of dairy cattle. In the future we should like to see larger numbers of Guernseys, Jerseys, Holsteins and Ayrshires at the great state fair of a great dairy state.

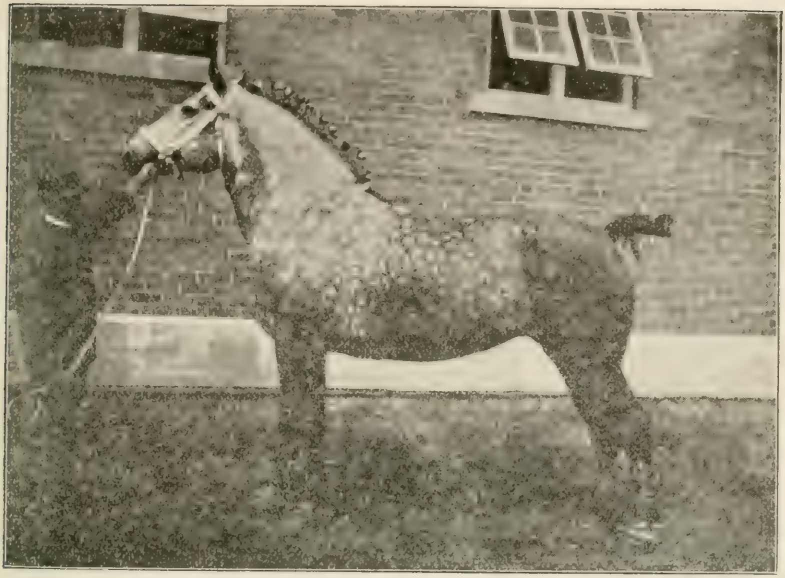
Professor Pew, of the Iowa State College, judged all the dairy breeds.

THE HORSE SHOW.

In comparison, the Iowa horse show of 1910 was extremely "progressive." We cannot recall a time when all departments were so well filled with high-class specimens of the different breeds. Other shows may have been greater in numbers, but it is doubtful if the several draft breeds ever were presented in more classic form than was seen this year. The best products from the leading horse breeding districts of the world were on exhibition, and afforded a great object lesson for thought and study for the American breeder and farmer. When will Americans produce their own horses? When they learn and practice the foreign methods of development. The American breeder, however, was an important factor in this show, and received many prizes on his productions; but the best prizes went to imported horses. The state of Iowa has every facility for growing the best draft horse in the world, and we hope the time will come when its farmers make this hope a reality.

PERCHERONS.

The Percherons made the largest show in numbers of any of the draft classes, and great interest centered around this popular breed through all the show. Forty-three entries were made in the four-year stallion class, but only fifteen were shown, being less than last year. In character this class, everything considered, was scarcely up to former shows, but the two and three year old stallion classes were well filled, the former being the largest class of the show, with twenty-eight in line. They proved a sensational attraction and furnished a strenuous task for the awarding committee. Insouciant, from the Crouch farms, and first prize two-year-old at the Paris show in France this year, drew first place. Many fine specimens were outside the money. The hot contest of the



PERCHERON MARE
Iowa State Fair and Exposition, 1910

Percheron show came in the four-year-old mare class, where the judges seemed to lose sight of both breed type and soundness, by placing the Burgess entry, Hellen, over the Crouch dapple grap, Favorite. The latter was a rare example of exact Percheron type and beauty, with clean, sound limbs, and should have been placed at the head of the class. Such decisions are harmful to the breed and misleading to the public. This same statement applies to the roan Castile, third prize mare in this same class, whose dam was at least frightened by a Belgian stallion. Decisions of this kind only tend to defame the breed, and fail to deceive anyone who is educated along Percheron lines. John De Lancy and Robert Miller were the judges.

ENGLISH SHIRES.

This great draft breed seemed to attract unusual attention this year. This was due to the fact that the very best specimens that the breed affords were on exhibition. Trumans' Pioneer Stud Farm was out with a large stable that won many first prizes in the stallion and mare classes. Dan Patch, their international winner last year, proved invincible to all competition and easily won first place in the four-year-old stallion class, and afterward was made grand champion of the show. The stallion classes were not large, but in form, value and breed character were very good. The mare classes made an excellent show. The prizes were well distributed with Trumans winning first and championship on their gray mare, Shelford's Pride, a rare specimen of Shire character, and with all the exacting qualifications of the typical brood mare. Wm. Crownover accomplished an unusual feat by winning first prize and championship for American bred Shire stallion with his bay stallion foal. We cannot recall a time when these honors ever fell to a foal at any important show. Robert Ogilvie was judge.

CLYDESDALES.

In form, quality, breed character, soundness and beauty, this favorite Scotch breed was the equal of any of the draft breeds. But in numbers it was lacking, being the smallest of the show. A notable feature of the show in this breed was its great uniformity of breed type, which was very prominent throughout. McLay Bros., of Wisconsin, and Forbes Bros., of Wyoming, furnished the larger part of the show, aided by a few Iowa breeders. Professor Kennedy placed the awards.

BELGIANS.

The classes for this breed were well filled throughout, although in numbers it was not up to former shows seen at Iowa. No show, however, has been more select and freer from common kinds. The "progressive" type prevailed through both stallion and mare classes. The great weight in evidence in the stallion classes was little short of phenomenal. The Belgians received numerous compliments, and made lasting impressions on those who saw the show. Robert Ogilvie placed the awards.

MORGANS.

There was a very good display of Morgans, the exhibitors being C. R. Crane, St. Charles, Ill.; S. B. Mills, Ames, Iowa; P. F. Simth, Montezuma, Iowa; C. F. Dewey, Amboy, Ill.; O. J. Mooers, Columbia, Mo.; James C. Brunk, Springfield, Ill.; George Bacon, Amboy, Ill. First premium for three-year-old stallion went to Crane, Mills second, Smith third. Dewey won first with two-year-old stallion, Brunk with yearling stallion and also foal and three-year-old mare. Crane won first with two-year-old filly, Mills first with yearling filly. Crane secured champion stallion, Mills being reserve. Crane also won champion mare, Brunk being reserve. Crane won get of stallion and grand display.

There was an excellent exhibit of American carriage horses and standard-bred trotters. The Morgan exhibitors had things much their own way in the carriage horse class.

HACKNEYS.

Hackneys were exhibited by J. Crouch & Son, Chas. E. Bunn, A. L. Champlin, of Ames, Iowa, and Henry Lefebure, Fairfax, Iowa. Crouch won first with three-year-old stallion, Bunn with two-year-old, and Lefebure with stallion foal. Champlin won first with four-year-old mare, Bunn with three-year-old mare, two-year-old mare and filly. Lefebure won with brood mare and foal. Champion mare went to Bunn.

THE PONY SHOW.

The showing of ponies was the largest ever seen at Des Moines. The rings were all well filled with high-class entries, in one ring there being thirty-five ponies. The pavilion was well filled with young and old visitors during the progress of the pony show. The teams hitched to buggies made perhaps the biggest hit, followed closely by the pony saddlers.

THE HOG SHOW.

Iowa's annual swine exhibit is always a big part of the stock show at the State Fair, and well represents the importance of the state as first in the production of pork. In numbers the exhibit was about the same as a year ago. The strong price incentive to the growth of pork prevailing the past year has not tended to increase the size of the hog show, and apparently not the size of the pure-bred herds, or the amount of stock for sale. The fact that "pigs is pigs" in Packingtown induces breeders to sell all but the very best on the market rather than wait for the farmer trade. This fact, too, has kept a lot of cheap or common sale stock out of the pens at the State Fair.

The different breeds represented this year were Poland Chinas, Duroc Jerseys, Chester Whites, Berkshires, Hampshires, Yorkshires and Tamworths. The Hampshire show was the largest and best this breed has ever made, and the Berkshire show was the best at Des Moines in a long time. Neither the Poland China nor the Duroc Jersey exhibits were as large as some former exhibits, but these two breeds continue to make up the big end of the hog show as to numbers. There were two distinct types of Polands as usual, the big or coarser type and the small quality type. Both types got in the money, but to recognize both types increased the difficulties of the judge. In the aged classes the best of the big type winners was the third prize winner in the aged boar class. This hog was certainly one of the best of his type that has been seen at the Iowa State Fair, and he had friends for first place. Others, including the judge, contended that the score card would have to be changed to allow this rating in competition with the smaller typed show hogs. The junior yearling boar class of twenty-nine was one of the strongest Poland classes of the show. Considering the different types he had to contend with, the judge got through very harmoniously. In quality and numbers, the Duroc Jersey show was about on a par with the Poland show. The exhibitors were in a mood at times to be "shown," and some of the decisions were pretty freely discussed. It was largely an Iowa exhibit, with some strong competition from outside the state. The championships, however, were won by Iowa exhibitors.

THE SHEEP SHOW.

A department of the fair which showed distinctive improvement over previous years was the sheep show. Stronger in numbers, better in quality, the sheep show at the Iowa State Fair in 1910 may be put down as the best show that has ever been held in the state, and it is doubtful if a better sheep show has been made at any state fair. The Shropshires were the leading breed, and in one of the rings four English prize winners were in competition. The flocks of McKerrow & Sons, Wm. Cooper & Nephews, and Chandler Bros. were particularly strong, as the record of the awards show. The sheep exhibit was highly gratifying to Superintendent Escher, the new member of the board, who had the sheep and poultry exhibits in charge this year. Such a show as was made at the Iowa State Fair this year cannot but help but be of much benefit to the sheep breeders and to the Iowa farmers, as there is plenty of room for more sheep in Iowa, and it well reflects the increased interest which is now being manifested in sheep.

THE POULTRY SHOW.

Th poultry exhibit at the Iowa State Fair is coming to be one of the leading features of the week. Early Friday morning coops of chickens were en route to the fair, and by Monday morning everything was in place, and the chorus of crows began. The Barred Rocks were the largest class; later comers have difficulty in replacing the farmer's first love in the poultry yard, though the Rhode Island Reds were a close second to the Barred Rocks in numbers. Of old birds there were comparatively few entries, in some classes but a single entry. Undoubtedly the fact that the days immediately preceding the fair were exceptionally warm interfered with the entries of old stock; few breeders can afford to take the risk of shipping and penning valuable breeding stock with the temperature running from 94 to 96 in the shade. Fortunately a cool wave made the birds fairly comfortable during the week. According to Superintendent Warner the quality of the birds was "way up." E. G. Roberts, with 450 birds of good quality, was the only large exhibitor present.

Indian Runner ducks showed a noticeable increase in popularity and attracted much attention. Apparently each exhibitor feared the class would not be full, as three of a kind, the number of entries required to get first money for the class, was almost universal. This breed is growing in favor, and we hope that next year the management will recognize this fact by awarding three dollars for first money, as in the Pekin duck classes, in stead of two dollars, as at present.

The poultry department was complimented by having as visitors through the fair,. D. D. Hale, of the Reliable Poultry Journal; E. E. Richards, of the Western Poultry Journal; Theodore Hewes, of the Inland; H. H. Rankin of the American Poultryman, and Reese V. Hicks of Poultry Culture, the first time, we believe, so many of our poultry journals have given personal attention to the Iowa hen at the state fair. A petition was circulated asking of the Board of Agriculture that the poultry department be given a separate superintendent.

It is a great mistake to leave birds which "could easily beat the prize winners" at home. We met so many people who "had better birds at home than any at the fair," and now while there is plenty of time to plan for the appearance of these birds next year, we trust their owners will arrange to bring them and help out the show in 1911. One young man who regretted not bringing his birds added, after telling of their quality, "I got them from my mother." We like to see a man convinced that whatever he gets from his mother is the best, and trust when he gives the exhibitors a chance to be defeated by mother's birds that he will not be disappointed.

We like to believe that there are numbers of perfect birds in the state, but sometimes we wondered when we heard of these good birds at home if the Barred Rocks "never had shown foreign feathers" or "faded, spotted shanks;" if the white varieties "never had shown a fleck of black, or a tinge of cream in ten years;" if the reds had always been a "uniformly beautiful cherry red;" if the buffs "never faded," etc. By all manners of means, next year, let the owners of perfect specimens bring them out. We can personally guarantee that the sales of such high-scoring birds will be equal to the supply at any price the owner cares to fix, and the show will be greatly benefited by their presence.

THE BOYS' JUDGING CONTEST.

Forty-two boys furnished the strongest competition which has yet been seen at any of the boys' judging contests at the Iowa State Fair. They were competing for scholarships at the Iowa State College at Ames, totalling to $600; $200 for the boy who took first, $150 for the second boy, $125 for third place, $100 for fourth, and $25 for fifth. Any boy in Iowa under twenty-one years of age who had not been regularly to college was eligible to this contest. Considering the amount of money up it was surprising that more Iowa boys did not take advantage of this contest. The contest occupied half a day's time, and consisted in placing classes of cattle, horses, hogs and corn samples, and giving reasons for the same. The results of the contest follow:

THE BREEDERS GAZETTE.

CHICAGO, ILLS.

A greater Iowa than the public ever has known was introduced with impressive ceremonies by the 56th annual state fair at Des Moines last week.

Iowa has climbed to its agricultueal renown on a ladder of corn anchored in a fat soil which supports and is fed by a live stock population having no state equal in breeding and value. Nature did her supreme work in fashioning this giant full breakfast, dinner and supper pail of the Middle West, and men, working through the state fair, the agricultural college and other educational agencies, are doing their essential part in working its rich contents into a citizenship which has an eye for beauty, aspirations for useful culture and ambitions to excel in material wealth. This was the overtowering note in the forceful message of the state fair, and about 240,000 people received it in a spirit of prosperous enthusiasm.

Secretary J. C. Simpson's practical dreams are growing into splendid realities. This fair is his pleasant obsession. Focusing upon its development the wisdom of the managing board and the searchlight of his own experience and study, he has made it a telling advertisement of Iowa's agricultural resources and possibilities. Exploitational to a proper extent, it is fundamentally educational, inspirational and constructive. Its purpose is not so much to demonstrate an acknowledged agricultural supremacy as to encourage intensive development. A "greater Iowa," to quote the secretary's phrase, is its prime object, and its mighty trend in that direction was never so sweeping and marked as on this occasion.

In the wealth and magnificence of its exhibits, which filled to overflowing almost every department, there was not the faintest token of a lean year. In the tremendous attendance and infectious optimism of the people there were no hints of pinching conditions. Every sign by which a state's rural health may fairly be judged spelled "all right," and these were the words which were audible throughout the loud chorus of the fair's glad song. Iowa has had many a better and larger hay crop than it put away this summer, it has counted on more bushels of corn at this season than it is now expecting, and it possessed more millions of dollars' worth of hogs a year ago than it has now, but the net damage due to a treacherous spring and a summer drouth is overshadowed by old reserves and the bounteous certainties of the year. Recent rains have revived pastures and saved tons of corn. Early frosts would damage considerable corn, and fields here and there probably are doomed, but the bulk of the crop is almost as safe as old wheat in the mill. Late plantings, come the worst, will yield a large crop of filled silos, which Iowa farmers are coming to appreciate at their full value.

Rain on Sunday, which interfered somewhat with the sacred concert of the day, and on Monday and a shower early Tuesday morning were the climatic handicaps of the week; but they did not materially upset programmes or the plans of visitors. Besides, the Iowa fair is beginning to shed water in such large spots that rains have lost their old-time terror on these grounds. Wednesday was the banner day; more than 57,000 people were in attendance. Last year was the most successful in the history of the fair; this season's attendance and income are larger by substantial margins. In this comparison is the condensed story of the so-called "bad year" of 1910.

Hogs alone showed a decrease in entries compared with last year. In all other sections appreciable increases were registered, the exhibit of farm machinery being limited merely by the ground space available. Cattle, horses and sheep made the strongest and best shows ever seen at Des Moines. Herefords, Guernseys, Percherons, Belgians, Shetland Ponies and Shropshires loomed up with a prominence which they have never hitherto attained at this show. Field, orchard and garden crops, dairy products, poultry and special exhibits by companies and individuals were in profuse abundance, improvement in numbers and character being marked in most cases over corresponding displays last year. A nasty mess of side-shows was on hand to excite low appetites.

One of the most effective and interesting features was the Iowa State College's exhibit, occupying one of the old buildings on the crest of the hill at the east side of the grounds. Labels, illustrations and sundry specimens of material were arranged to produce a quick and emphatic effect, the departments of agronomy, animal husbandry, civil engineering and domestic science offering many helpful suggestions. In the agricultural building a new and vital idea was discovered. Secretary Simpson has eliminated county exhibits, which for some years have been perfunctorily maintained in this department, and substituted individual farm exhibits. We counted 21 entries. More than $1,200 is offered in prizes, and the class is divided into three sections, as follows: Exhibits from farms of 80 acres or less, exhibits from farms of more than 80 acres, and exhibits from farms in Polk county (in which Des Moines is situated) of any size. A scale of points by which the entries were judged gives 50 points out of 100 on the "quality of products," and the variety of products includes those from field, garden and orchard, with 30 points for field products, showing that practical rather than special or truck-farming is to be encouraged. We believe that this new Iowa idea when in full effect will do more to stimulate interest in intensive farming than anything that the fair has ever done.

Another valuable idea was in tangible form in the agricultural building. Fred Hethershaw, on authority of the Iowa State Board of Agriculture, had executed in corn of the standard colors, a large cornbelt "map" of the United States, resting upon a platform sloping gently at the Florida side. Grains of wheat represented the oceans, and white corn the states in which that cereal is an inconsequential crop. As the edge of the belt was approached yellow kernels appeared on their white foundation and increased as the inward advance proceeded, until, at the heart of the region red kernels were in exclusive occupancy. A more graphic method than this of illustrating the boundaries of the cornbelt has never been devised. With the displayed crop and stock statistics accompanying it this feature was worth many times its cost.

Since last year $18,000 has been spent for improvements. These include 50,000 feet of concrete walks, several new speed barns, an extension of the water main system and the construction of four unique sanitary drinking fountains. We cannot here describe these admirable fountains further than to say that they are the most satisfactory that we have ever seen.

Some of the special needs of the fair include an implement building, a sheep barn, five or six additional sections to the cattle and horse barns, connection with a Des Moines electric lighting plant so as to insure proper lighting of the popular night programmes at the fair, and sanitary toilet accommodations. These additions to the state fair's equipment should be amply provided for by the legislature answering the request of the people.

No fair grounds with which we are familiar could be beautified so effectively as those at Des Moines, and it is gratifying to learn that O. C. Simonds, the foremost landscapist in this country, has been commissioned by the Iowa fair board to design the highest artistic effects of which these grounds are capable. A Greater Iowa is growing a Greater Iowa State Fair—a fair which intends to be both beautiful and useful.

THE BEEF CATTLE DIVISION.

THE SHORT-HORNS.

Rising in notable strength to every occasion which invites their presence, the Short-horns were in impressive appearance at the Des Moines show. They came from nine states in numbers representative of the breed's numerical supremacy. Seventeen of the 24 exhibitors were "at home"; a similar preponderance of Iowa stock over that from other states was sustained in each section, so that it was conspicuously a state exhibition. Coming together at this the opening show on the great western circuit, and beginning a campaign which promises its full measure of interest, the Short-horns formed an exhibit well up to the high standard of the breed at this fair. It was a magnificent wealth of material presented in rather less than customary showyard condition which received assay labels in the big pavilion. As the season advances considerable flesh improvement is sure to be made. Many a more favorable summer than the present in which to fit cattle has been enjoyed by exhibitors, and herds in the cornbelt have passed through many a kindlier winter than last. In these circumstances it was inevitable that a few rough edges should be noticed in so large a collection of cattle as the breed contributed to the competitive struggles seen here. On the whole, however, it was a creditable effort on the part of breeders, and in some classes the excellence of individuals ran up to unusual heights.

For the first time in the history of our state fairs the Short-horns were judged by a foreigner, J. Deane Willis, Brampton Manor, Codford, Wiltshire, England, who came by special invitation of the board to perform this important service. He is to act in the same capacity at the Toronto Exposition in Canada this week. It is Mr. Willis' first trip to America. His unbroken identification with the Short-horn trade in Great Britain for more than 32 years, his keen personal interest in all the problems which arise in breeding, feeding and showing, and his wide experience as a judge in his own country qualified him for the intelligent and highly satisfactory work which he did at this show. At no time did he exhibit the slightest confusion. Going at his task with confidence and in a spirit of genial concern, he impressed all who saw his work as one who knew his business. We doubt whether a collection of American breeding cattle has ever received an examination that, from a breeder's point of view, was so thorough, so consistent, so instructive to spectators, and, withal, so acceptable to exhibitors as Mr. Willis bestowed upon the Short-horns at Des Moines. When he had finished his work he was presented with a memorial signed by the Short-horn exhibitors expressing the heartiest appreciation of his services.

Since the open classes for Short-horns and Herefords carry seven to eight prizes, we have omitted publication of the awards in the classes open to Iowa entries only, most of the winners in the state rings being also included in the open prize list. It is understood, of course, that the judging of the state classes proceeded in connection with the regular order, occasioning, however, more or less annoyance. In the state classes the first-prize entries are the same animals which stood highest of the Iowa contestants in the open rings. For example, the fifth-prize senior yearling bull in the open class might be first in the Iowa class.

Each recent year has shown a growing percentage of white Short-horns at the leading shows. White is now so common in exhibits of this breed that it is losing the glamour of newness. As white bulls travel, after the example of an ancient heifer, the "white plague" grows in beneficent fury. There are enough reds to keep the showyards rich in the breed's old-time color combinations and purities, but just now the whites are marshaling ominous forces into the strongholds of the reds. Happily there are no signs of the development of another color fad on this side of the water; a good Short-horn may have any color. If a South American buyer could be induced to look this way for breeding stock he could find dark reds in bewildering numbers. We make the foregoing observations by way of involuntary recognition of the abundance of white in the coats of the dozen aged bulls which met in competition for the first time this season. It would be unfair to our Short-horn breeding industry if Mr. Willis had gained from this class a permanent improssion, for many better rings of aged Short-horn bulls have been judged at Des Moines. He concluded no doubt after he had judged the females that this happens to be an "off-year" as to bulls. White Star, head of the lot, stood fifth in a class of 25 entries at the Royal show at Liverpool in June. White he is, of a pattern resembling in some respects the noted deceased sire Whitehall Sultan, and was brought over this summer by Mr. Harding to follow in the footsteps of that celebrated champion. White Star, Scotch-topped in breeding, coming four years old, has not quite the length, and, in his present form, not the weight of his predecessor in the Anoka herd, but he shows a deal of character, and when he reaches the condition toward which he is working he should be more formidable in the best of company. Straight Marshall, presented in first-rate fix, was strong in his position, and Gallant Knight's Heir, fashioned accurately after his noted sire, pleased with his symmetry and compactness. Carpenter & Ross, who exhibited only three head at this fair, headed the two-year-olds with The Captain, one of Avendale's best-modeled sons. Sultan Mine stood so close as to suggest his kinship. Proud Robin led a first-rate lot of senior yearlings. A low-set, trimly-built bull he is, with well-developed quarters. Gay Knight, of Meadow Lawn ancestry, is a popular type among breeders. Several acceptable junior yearlings were a compliment to their breeding and feeding. Fond Memory, which freshens memories of his distinguished sire (Whitehall Sultan), gained premier position after a close rub with True Cumberland, an excellent type copy of his sire, Cumberland's Last. In the senior bull calves Mr. Willis located his junior champion, the red Mysie's Champion advancing promptly to the top. Of ample length and smooth mold, this chap makes a good impression, and there is much outcome to him. A dozen juniors were perhaps the outstanding feature of show of the sex, a capital pair from the Anoka herd taking the best places.

On the whole, the females were of better showyard merit than the bulls. Sinissippi Rose 2d comes forward in very good form for the campaign, and her leadership in the aged cow class was not seriously questioned by anybody. This white, short-legged, matronly-looking daughter of Ceremonious Archer, close to five years of age, has been carried along with much skill. Most of the two-year-olds were of superior character, and the winners were well chosen. Miss Marshall 2d, the senior and grand champion of the show, has a bulk, an outline and a look of quality which, added to her depth and smoothness of flesh and finish, qualified her for achievement in this ring. Eleven senior yearlings made a creditable showing, the first three winners embracing the essence of its chief merit. New Year's Delight, a good illustration of the Brampton Knight type, stood solidly at the top in the ring of 15 junior yearlings, with a sweet pair below her. Senior heifer calves, numbering 16, made the female exhibit of the breed. Scottish Cumberland, growthy, sappy and straight-lined, and Phacelia, of much the same architecture, and equally outstanding, toned up this handsome collection, albeit eight other entries were of sterling quality. Fourteen junior heifer calves made a pleasing display, Mildred Snowball standing out well to the fore.

THE HEREFORDS.

Never before in the history of the Iowa State Fair have Herefords made such a brilliant, impressive exhibit as that which loomed up as perhaps the handsomest bovine display in its pavilion last week. It was as creditable a joint effort on the part of breeders as could be made We have seen larger classes of Herefords at Des Moines, but no one has ever seen at this fair so many first-class "white-face" show cattle as the breed contributed to this memorable event. It is evident, with so many strong herds in the field, that we are to have the most interesting and helpful series of showyard contests this year that the Hereford fraternity has furnished in many days. Indeed the admirable exhibit at Des Moines marks the dawn of a new and lively interest in the breed, if ringside interest and the enthusiasm of exhibitors are capable of interpretation. Numerically the show was fully representative of the breeds position in western agriculture, and in quality, uniformity of type and degree of finish it was a masterpiece. Inferior sorts were altogether wanting; the rings were not mixed with wheat and chaff; extraordinary individual merit distinguished each class, and the aggregate breed wealth which it advertised created lasting impressions. Colorado, Kansas, Missouri, Wisconsin, Indiana and Iowa herds were represented by wisely-chosen and skilfully-fed cattle in which the indescribable charm of Hereford-bloom had the appeal of genuine art. No breed has had its day which can originate such a robust expression of life and show so much practical usefulness as compelled attention here.

Curtiss, a four-year-old of more than average showyard size, and approaching a very practical type, by heading the aged bulls, gave ample suggestion of the line toward which Prof. R. J. Kinzer, Manhattan, Kans., intended to hew as he pursued his work as judge of this breed. In the consistency with which he adhered to the type chosen in this opening class he left a complimentary record. Prime Lad 9th, showing in his accustomed good form, remains one of the most satisfactory models of the Americanized Hereford that has been developed in years. Repeater is of much the same pattern if a trifle less compact. Gay Lad 6th, the junior and grand champion, has the character, the spring of rib, heft of quarter, evenness of lines and finish that are inseparable from a truly great Hereford bull. A beast of such rare excellence and breed value is a common pride of the fraternity; his distinctions earn universal compliment. He was a star last year; he comes this year as a full-fledged planet. Seldom indeed has a better senior yearling "white-face" put in public appearance. Of the juniors Discounter was a strong leader—a low-set, deep, thick bull of bold, masculine presence. Senior bull calves of striking merit from one end of the line to the other revealed an embarrassment of riches for the painstaking judge, but he singled out a safe and sound candidate for premier honors when he selected Donald Lad 3d. That sappy, even-turned calf is a generously good one. It is not often that so good a ring of junior bull calves of any breed is seen as that which presented Victor Fairfax in astonishingly select company. He is as likely a calf as Perfection Fairfax has sired. We cannot go to the inordinate length of merited comment on each prize winner, but we must record a hearty appreciation of the substantial worth and thoroughly creditable form of the so-called submerged winners, especially those from north-central Colorado. It is the first time that Colorado has spoken with such lusty pure-bred Hereford eloquence to the cornbelt, and she compelled the attention of a large admiration.

Lady Fairfax 4th makes up an acceptable senior and grand champion female, impressing strongly with her breadth of loin, expanse of rib, handsomeness of front and trueness to type. She competed with 11 unusually breedy-looking matrons for her class honors. Princess 16th, taking confident place at the top of the line embracing 14 entries, is a commendable stamp capitally fitted. Forget-met-not, prominently good in the same class, makes a plea with her name that cannot be ignored. Twelve senior yearlings, the equal of those seen at this show would be difficult to find in any breed. Cora 2d, sire Prime Lad, is one of the neatest and most accurate types that Frank W. Van Natta has ever led into a showring. Her present estate is excellent; her future is better. It is not difficult to pick out a Beau Donald; Harris' Princess 125th by Beau Donald 5th was quickly discovered in a maze of 15 competing junior yearling heifers. Her hindquarters show plainly her kinship with that originator of a distinct betterment in this part of Hereford anatomy. Prof. Kinzer found his junior champion female in the beautiful ring of 18 senior heifer calves, Donald Lass 4th by Prime Lad 9th receiving this coveted recognition. Twins were first and second in the junior class. Harris' Princess 184th and Harris' Princess 185th by Beau Donald 5th and out of Marietta are probably the best developed twins that the breed has shown.

ABERDEEN-ANGUS.

Each year shows an increase in the size and quality of the "black fringe" that characterizes the exhibit of beef cattle in the pavilion at Des Moines. To those who have attended the Iowa State Fair regularly for ten seasons this year's collection of Angus cattle furnishes eye-opening proof of the progress which the breed is making in that state. Improvement in the character and condition of the cattle has been marked during the decade, and the increase in numbers has been notable. It is to be expected that a breed which has gained a monumental reputation by furnishing grand champion carlots and high-dressing carcasses at the International should find special favor among farmers who are peculiarly well adapted to the business of making beef in feedlots; but the "doddies" have made greater strides than is commonly known. Exhibitors were present in stronger numbers this year than ever before at Des Moines, and the judging by O. E. Bradfute, Xenia, O., was witnessed by a larger specially interested crowd than usually collects around this breed's exhibit. As a show of breeding stock, with the fact of practical usefulness standing uppermost and conspicuous in every class, we doubt whether the "blacks" have ever before produced such a strong net effect as on this occasion. Many of the entries were not so well fitted as we shall see them a little later, a few being strikingly unfurnished, but the leading winners throughout rose to an average superiority seldom surpassed. Iowa contributed all the entries. A few new exhibitors will be identified in the prize list.

Oakville Quiet Lad, a popular choice of six aged bulls, is in fine bloom, smooth as an egg, very close to the ground, thick, deep and wide with bulging buttocks, and a real gay bull of a coveted type. He has begun the season backed by a strong initial success. Ernest is about right in type, and if a trifle smoother he would have friends for the headship of this group of bulls. Smoothness and compactness are the words which best describe Quality Prince, a son of Vala's Rosegay. Heatherbloom King, one of the thickest, neatest bulls of his age, scored easily in the senior yearlings. St. Blaise may be a trifle under size, but he is so thoroughly satisfactory in every other respect that no one doubted his success in a ring of six juniors. Mr. McHenry has produced a sensation in Protein, junior champion of the show. He represents about as nice chiseling as aided nature can do in bovine sculpture. A smart lot of junior bull calves found their acknowledged leader in the nugget-like Peter Pan, a chip off the good old block, Elmar Lad.

Barbara McHenry 24th has the scale, brevity of leg, level lines, depth and smoothness of flesh and "doddie" character which mark most of the grand champion females of this breed. A handsome two-year-old is Blackberry 4th, a daughter of Prince Ito 2d. As a breeder's type she is justly popular. Nine particularly high class senior yearlings filled the eye that seeks Angus points of excellence. Barbara Woodson, one of the smoothest and most accurately-proportioned young things that the shows have ever brought out, made an unchallenged headpiece for the comely heifers. Attractive as were the senior yearlings, the juniors surpassed them. A dozen showed. Another daughter of Elmar Lad, Pride of Alta 12th, rose to the top place in this ring. Blackcap McHenry 8th was the overtopping winner in the senior heifer calves, and Eileen of Alta, 2d, another Elmer Lad daughter, as easily gained her place among the juniors.

THE GALLOWAYS.

Four well-fitted herds of Galloways were in competition, Straub Bros., Avoca, Neb., showing two, and C. S. Hechtner, Chariton, Ia., and J. E. Bales & Son of Iowa one each. E. T. Davis, Iowa City, Ia., made the awards. Many larger shows of this breed have been seen at Des Moines, but none of them excelled in showyard condition and eye-catching quality the exhibit made there last week. Properly brought out, Galloways make an exceedingly attractive show. Capt. 4th of Tarbreoch and Floss 2d, aged bull and aged cow respectively, furnished ample evidence of the high degree of beef maturity to which the breed can be made to go under proper care, and at the same time illustrated the chief characteristics of the breed as effectively as it could be done. We do not remember to have seen quite so much beef and fresh bloom in a Galloway show as the Nebraska entries revealed, and this observation was not confined to one herd alone either. In these circumstances there was sharp competition notwithstanding a numerical shortage.

THE POLLED DURHAMS.

Considering the small numbers present, the Polled Durhams made a capital showing. Five exhibitors furnished the entries, and Thomas F. Flynn, Des Moines, Ia., awarded the prizes. Marshal of the Mound is a Polled Durham show in himself, and the prize list contains the names of several of his sons and daughters. He is in attractive fix, and easily ranks as one of the breed's strongest representatives. With the handsome four-year-old cow Buttonwood Jenny Lind 4th, Miller & Sons have a pair which is abundantly qualified to make friends for this increasingly popular type of Shorthorn. Walker Bros. showed a rare good junior heifer calf, Miss Charming, appropriately named. Each class afforded keen competition, and revealed an average excellence which is a decided compliment to the breed and the exhibitors. For the most part the cattle were in standard show condition, and as a whole they scored high in public appreciation.

THE RED POLLS.

Red Polls, shown by W. S. Hill, Alexandria, S. D., and Frank Davis & Sons of Nebraska, were a small class, but many of the rings were remarkably strong. Seldom does one see so much breed character and fidelity to type as were exposed in the course of the judging. As the breed's senior and grand champion bull, Rutland, is as typical and outstanding as his distinction could warrant. Monarch is a decidedly useful type, with plenty of dual-purpose character in his make-up. Milk was rather more prominent than beef in the exhibit as a whole, but J. W. Martin, Gotham, Wis., who awarded the prizes, struck the right note of balance between the two types in his excellent judging. In the females the Florences had the championships. Florence is a very good name, but Red Poll breeders are overworking it a little.

FAT STEERS.

Shorthorn, Hereford and Angus steers with a few Galloways were forward in numbers and condition to make a strong supplement to the breeding cattle. Both pure breds and grades were exhibited, and, as usual, keen interest centered in the grand championships. S. L. Brock's cross-bred Hereford yearling Paragon A. was the grand champion steer, and Carpenter & Ross' Shorthorns were the grand champion group. As is customary, the judges of the breeding classes worked together in awarding these prizes. Paragon A. is a remarkably smooth, thick-fleshed bullock of correct type, and while his covering was not so firm as could be desired, he is a great block of beef. Chancellor's Seal and Red King, both extra good Shorthorn steers, made Mr. Willis' work particularly interesting in the two-year-old class of pure-breds, and Donald Lad 5th, a yearling, was the sensation of a first-class collection of Hereford steers. Prof. Kinzer made him champion of the breed. Mr. Miller's cross-bred Angus yearling Victor was the candidate of the "blacks" for the grand championship, and he had many ringside votes for the honor. Mr. Bradfute considered him the best butcher's beast in the show.

THE DAIRY CATTLE.

All the leading breeds of dairy cattle were shown in numbers of marked collective strength, Guernseys making an especially high-class exhibit. Gradually during the past 10 years, and much more rapidly within the past five, interest in this department of the fair has increased to a significant extent. There can be no doubt that the West is going in for an immensely larger number and a much higher grade of dairy cows than it now possesses. Its dairy farmers are intent on weeding out unprofitable performers, determined to improve working herds by using the best blood that advanced registry breeding has developed, and they have shown a remarkable willingness to put time and money into every phase of the business. It is therefore no wonder that the show of the dairy breed at Des Moines, a city noted for an inadequate and an inferior milk supply, and situated in the heart of a territory wherein dairying is sure to take strong hold, should assume larger proportions with the lapse of years.

We have counted at previous Iowa state fairs more entries in this section than were assembled last week, but the quality of the exhibit was up to a very high standard. Moreover, the popular interest manifested in the competitions, and in the cattle while in the barns, to say nothing of many other forms in which it finds expression, is ample evidence that thousands of cornbelt farmers are thinking seriously of engaging in milk production either as a side-line or as a specialty.

As population increases dairying flourishes. Dairy cattle, in the hands of competent owners, are liberally profitable in the manufacture of staple products for which a strong and growing demand greedily waits. We are on the verge of a wide-spread development of practical dairying in the Middle West. Populous cities, throbbing with industrial life, have grown up in this region, and their food requirements, already extensive and insistent, are absolutely insatiable as to the table necessities supplied by dairy cows. Economies become more minute as hungry mouths multiply. We are now facing conditions which make it necessary to produce food in the greatest possible abundance where its consumption is largest. Dairying is taking permanent root in the cornbelt in response to the call of our enormous urban population. However important this vital industry may be at present, and however marked its development, no student of our food problems believes that it is out of infancy. Indeed, in a country so large as ours, with a future too complex and populous to imagine, our dairy industry now is less than an infant; it is not yet born.

The Gazette, recognizing the intimate economic relation which must exist between practical dairying and the broad systems of agriculture advocated in its columns for years, urges with a new emphasis serious consideration of the opportunities which this comparatively raw field offers. Bread, meat and milk are indispensable to the human race. Our national welfare and higher civilization depend essentially upon the availability of these products to the masses of the people. Their availability depends upon the abundance of their production. No one who produces them according to modern methods and markets them with corresponding intelligence, can fail of substantial financial reward. The Gazette believes that the surest and quickest way to increase the quantity and improve the quality of our meats and dairy products is to use the best available breeding stock, which should be housed and fed with greater intelligence than is now common, last but by no means least the resultant by-product (manure) being applied, without any loss of its plant food, to fields and pastures.

Prof. W. H. Pew, of the Iowa Agricultural College, Ames, judged all the cattle in this division, and his work was well received.

GUERNSEYS.

Guernseys of outstanding quality and in fine finish made probably the best exhibit which this breed ever has contributed to a western fair. Lord Mar is one of the most sensational bulls from the island. Lalla

Boots of Chantilly 3d, the grand champion female, is in about the same class. Daresay Daisy the junior champion, is a beautiful heifer of superior quality.

CHAMPION GUERNSEY COW
Iowa State Fair and Exposition, 1910

IN THE SWINE PENS.

Some contraction in numbers brought the list of hogs in the pens this year down to 2,200, which is 700 less than the final count a year ago. General contraction of breeding operations appears to have been the principal cause of the shortage, although some exhibitors cut down the size of their shipments to reduce the risk of contracting disease. With purebred hogs selling relatively low in comparison with stockyards prices there is no temptation to assume risks in order to exploit the stock or secure buyers. Then too, a ready local trade has already absorbed an unusual proportion of the surplus pigs of both sexes which ordinarily are brought along to the fair to be sold.

While the sale pigs were not as numerous as usual there was an improvement in their average quality which was gratifying to the fair officials and to those exhibitors who pride themselves on maintaining the high standard of their favorite breed in every respect. There is small profit in bringing cheap pigs along to be peddled at the fair and breeders are finding it out. The comparison between the inferior pig and the real choice one is too readily made when they are quartered in adjoining pens. In a natural way the much agitated question of regulating the consignments of sale pigs seems to be thus solving itself to the credit of breeders and the fair. What the swine exhibit lacked in numbers it made up in quality so that it was the general verdict that the winners were in most cases the best ever seen in the state.

The Berkshire contingent was particularly strong and seemed to be one of the largest as well as the best ever brought here. Rivalry could not have been more keen among the breeders of this progressive breed. It was no enviable task assigned to N. H. Gentry, W. N. Lovejoy and J. W. Martin of assigning places on the prize-list to such closely matched and stoutly supported rivals as met in the various rings. But the work had to be done, and to the credit of the committee be it said that there was no serious dissent from their opinions. Exhibitors who came with high hopes went away in some cases almost empty-handed, but they lost in a fight in which it was a credit even to stand inside the money. W. S. Corsa had the best of it. Faultless breeding and superb fitting secured the female grand championship for his herd. Mistress Piece is a model of strong feminine character and refined breed type, smooth, deep and long of body, splendid in her hams and active on her feet. The senior and grand champion boar of The Farmer Farm is scarcely so refined in quality as his rival but is long, wide and correct in pattern.

The Poland-China herds included the best young hogs ever seen at the fair and the high character was well maintained throughout the female classes. In boars the junior yearling and pig classes were of outstanding excellence, but the aged boars have made a better showing sometimes heretofore. J. M. Stewart made the awards, following closely the medium type, growthy but thick-fleshed and smooth. None of the coarse gangling kind got a look at the money, nor were there any of the delicate dumplings bearing away ribbons. The grand champions, both from the Meharry herd, are of the wide low strong-backed stamp, heavy in ham and short in leg, fine but not delicate, vigorous but not coarse. J. E. Francis & Son, New Lenox, Ill., furnished the principal competition for the Meharry herd, maintaining a uniformly high place in the list.

Duroc-Jerseys were as usual very prominent in numbers and the quality was the best ever seen at the fair. Prof. W. J. Kennedy and Prof. H. H. Kildee, both of Ames, Ia., judged this breed again this year. Exhibitors liked their work last year and came back with their herds as fit as they could make them. The coarse wrinkled beefy-boned hogs were consistently ignored in the placing and the compact medium-sized smooth hog, standing well up on his toes, was given the preference every time. Whenever any divergence was made from this stamp it was because the hog with both quality and substance could not always be found to take each of the lower places in the list. Freed's Colonel, the grand champion boar, is a junior yearling of excellent scale and smoothly molded from shoulder to ham. His mate for the highest honors, the Waltemeyer two-year-old sow Golden Queen 3d is a close match in build, wide and deep from end to end and stands up squarely on her toes.

Chester Whites in numbers and character comparing favorably with former years were judged by James Stewart, Ainsworth, Ia. He selected animals combining rugged size with refinement of outline and character.

This type the breed is capable of producing to the satisfaction of both farmers and showring specialists. The animals standing at the head of the classes were smooth wide low-set, but roomy, growthy and active. A number of herds contributed to the display, but the competition for supremacy lay mainly between D. H. Lewis of Illinois and E. L. Nagel & Son of Iowa. Lewis won first on aged and yearling boars and junior boar pig, senior yearling sow and both sow pigs, aged herd bred by exhibitor, both young herds and all of the championships except senior champion boar. Nagel was first with senior boar pig, aged herd, get and produce. Wm. Hoover of Iowa broke into the front rank with his junior yearling boar Chief Mahaska which also secured the senior championship. W. H. Dunbar of Iowa secured first on the aged sow Graceful. E. L. Leavens of Iowa came near the top a number of times with some hogs of excellent stamp.

Hampshires were present in numbers overshadowing all previous records for the breed at this fair, and the quality was so uniformly good that the judge, Geo. B. Buck, Sunny Hill, Ill., had no simple task in allotting the prizes. The sharp rivalry between exhibitors brought out much discussion of his decisions and it was the opinion of some of the breeders that he leaned a trifle too strongly toward the lard type of hog instead of giving prominent recognition to the smooth finish, flat long sides and neat bellies which the breeders are attempting to perpetuate. This is the difficulty which always confronts the breeders of any class of stock who attempt to produce a type intermediate between two extremes; the balance is bound to swing one way or the other according to the predilections of the judge. Mark Sharp of Illinois was the principal recipient of first prizes and championships. He secured first on senior and junior boar pigs, aged and senior yearling sows, senior sow pig, aged herd, both young herds, and produce of sow. His championships included junior boar and senior and grand champion sow. W. J. Brinagar & Sons of Missouri showed the first prize aged and junior yearling boars and the winning aged herd bred by exhibitor. Willie Essig of Indiana was forward with his senior yearling sow and get of boar. Frank Morrell of Illinois showed an outstanding senior yearling boar that secured the senior and grand championships, and C. M. Perrin of Iowa secured a blue ribbon on a senior sow pig. A number of other exhibitors came near the top at various times.

The bacon breeds were judged by Wilson Rowe, Ames, Ia., with an experienced regard for quality that met general approval. Tamworths were more numerous than Yorkshires and furnished a very high-class show of the hardy red rustling bacon-makers. J. W. Justice of Iowa was the most successful exhibitor, winning first in all of the boar classes and with senior yearling sow, the three herds other than aged herd, get, produce and male championships. C. C. Roup of Iowa was the principal runner-up in the various classes and reached the top with his aged sow, junior yearling sow and senior sow pig, aged herd and female championships. E. A. Thomas secured the only other blue ribbon on his junior sow pig. With Yorkshires B. F. Davidson of Iowa secured most of the first money, but Wheeler Homestead of New York broke into the front rank with a senior yearling boar, senior boar pig, aged and senior yearling sows, and senior and grand champion sow. B. F. Kunkle of Iowa was the only other exhibitor and he succeeded in getting the blue on his junior yearling boar.

AMONG THE SHEEP.

An increasing prominence marks the sheep department of Iowa's fair, reflecting in a measure the growing inclination of Iowa farmers to give sheep a permanent place upon their lands. From a small beginning in the sheep business with the feeding of bands of western lambs and wethers, men of the cornbelt are gradually acquiring breeding ewes and are finding them valuable as income-producers and useful as weed exterminators. The consequent demand for rams and ewes in Iowa has drawn more and better sheep to the show at Des Moines each year of late. This year there were 700 sheep altogether. Even the poorest were of creditable quality in most cases, for the demand for cheap inferior breeding sheep is now easily satisfied by the local trade of breeders, and buyers who take the time and expense to select breeding animals at the fair have acquired an appreciation and a desire for stock of correct type and prepotent character. In all-round excellence the sheep show was undoubtedly the best ever seen at Des Moines. Not only was the number of entries large but there was an unprecedented proportion of high-class stock, including many winners at the summer shows in England.

The sheep were comfortably quartered in the east end of the hog barn which was devoted entirely to them, while the old sheep sheds were used for cattle which exceeded in numbers the capacity of their barns. If the growth of the sheep department continues as it should additional room will be needed another year unless the number of hogs contracts. A temporary slight reduction of swine entries occurred this season owing to the general curtailment of breeding operations the past year, but next year is expected to witness such an expansion in swine entries as shall tax the capacity of the pens to the limit and leave no room to shelter the sheep unless a new and capacious sheep barn shall be provided.

The mutton breeds were judged by W. H. Beattie of Ontario, and he adhered to the compact, thick-meated, low-set animals of quality and correct breed type. His selections were in most cases commended by exhibitors. Of course some animals of excellent killing type had to take low places because they fell below breed standards. His work was careful and consistent. Unfortunately except in Shropshires and Hampshires there were not enough exhibitors to make the most lively competition, and interest in the judging lagged somewhat on that account, but Iowa farmers were constant frequenters of the sheep pens and judging tent, learning and buying.

Shropshires predominated to an overwhelming extent. The 320 sheep of this breed constituted an exhibition never before excelled at a state fair. There were 21 exhibitors of Shropshires including many Iowa breeders and their feeling naturally ran high, for competition was keen. The lion's share of awards was won by Chandler Bros., Chariton, Ia., on a very choice collection of imported and home-bred stock. Geo. McKerrow & Son, Pewaukee, Wis., and Elmendorf Farm, Lexington, Ky., also had sheep of exceptional quality, making the judge's task a very difficult one, and they shared conspicuously in the prizes.

Mr. Beattie insisted upon low-set compact vigorous Shropshires with the short wide heads, short thick ears and the complete face covering that distinguish the breed. Some exhibitors felt that in a few cases he sacrificed weight to some extent, but he stated that he considered the compact, medium-sized smooth active Shropshire to be the best farm sheep and the nearest approach to market standards as well as the most uniformly prepotent. Both of the open classes for yearlings brought out rings with a number at the top which would be a distinct credit in an International show. In the yearling ram class the decision was very close between first and second places, yet the winner for Chandler Bros. was so well supported by additional members of the same flock that the judge considered the pen of yearling rams exhibited by this firm was the best to which he had ever assigned an award. The Chandler champion ewe was commended by him as one of the best he had ever seen.

The exhibition of Shropshires bred by American and Iowa breeders was far ahead of anything seen at Des Moines heretofore. Next to Chandler Bros., J. S. Fawcett & Son and O. H. Peasley & Son had the best entries in these classes. The Chandler first-prize aged ewe in the Iowa class was good enough to be included in the champion flock in the open classes. In other years the prizes in the Iowa classes have frequently gone to sheep of indifferent breed type and shown in field condition. This year some of the winners in the Iowa classes got inside the money in the open classes. Even the very difficult feat of bringing out a home-bred ram lamb to compare favorably with the imported contingent was accomplished by Chandler Bros., whose first-prize lamb in the Iowa class stood fourth in the class open to all exhibitors.

The Oxford competition lay between Geo. McKerrow & Sons, Pewaukee, Wis., and Cooper & Nephews in the open classes, while John Graham, F. T. Lawton and C. C. Croxen furnished the entries for the Iowa special classes. McKerrow won both championships on a compact low-set meaty pair, much larger than they looked, although they lacked the extreme range of frame, which has sometimes been selected by American judges. Although the Oxfords were not numerous, the character of the entries was of the best, representing as it did two flocks of international reputation.

Hampshires made a very impressive show, as the McKerrow and Cooper & Nephews sheep found successful rivals from the flock of Renk Bros., Sun Prairie, Wis. It was the best collection of Hampshires ever seen in Iowa. It is a great credit to the work of Renk Bros., to secure as they did both of the championships and the flock prize in such company. Their ram especially is a strong, short-necked masculine, muscular fellow with none of the coarseness which occasionally appears in the breed. The ewe had sweet feminine type and compactness which do credit to her exhibitor's judgment in selecting their stock.

Southdowns were represented only in a small way by entries from the McKerrow and Cooper & Nephews flocks, and the prizes were well divided between them with McKerrow winning second on aged and yearling rams; third on ram lamb; third on aged and yearling ewes and lamb and second on flock. Cooper & Nephews won first on aged and yearling ram; first and second on ram lamb; first and second on aged and yearling ewe and lamb champion ram and ewe and first on flock.

Dorsets of a sturdy mutton stamp which won favor for the breed among Iowa farmers who saw them were shown from the excellent flocks of W. H. Miner of New York and Nash Bros. of Indiana. The former won first on yearling ram; first on aged ewe, yearling ewe and ewe lamb; champion ram and ewe, and first on flock. Nash Bros. won first on aged ram; first and second on ram lamb; second on aged ewe; second on yearling ewe; second and third on ewe lamb; first on get of sire, and second on flock.

An excellent flock of Cheviots was brought out by G. W. Parnell, of Indiana. His sheep excited much favorable inquiry among visitors who were unacquainted with the rustling ability and meaty carcasses of this hardy active breed. The Parnell flock readily captured all the first and second prizes and championships except that A. W. Arnold of Wisconsin won the seond flock prize.

The long-wools were sparsely represented except in Cotswold. Lewis Bros. of Illinois had a flock of the high-class type and condition for which this firm is noted, including some home-bred ewes and ram lambs of great quality and finish. All the principal prizes went to Lewis Bros. with practically no competition. Aside from Robert Taylor of Nebraska with Leicesters and A. W. Arnold of Wisconsin with Lincolns, no other long-wool sheep were shown.

Fine-wool sheep were on exhibition from a few widely scattered flocks including the noted Merinos of Uriah Cook & Sons of Ohio and the Rambouillets of F. S. King Bros. of Wyoming which won the principal prizes in their respective classes.

THE HORSE DEPARTMENT.

It is not singular that the general interest in horses the past few years should stimulate exhibitors to make the show of their lives at the opening fair of the season. In all-round quality and balance such an exhibition of horses was never before viewed by state fair visitors. Occasional classes called forth the comment that the high standard of last year was not fully maintained, but there was gratifying 'expansion and improvement in the showing of Clydesdales, draft geldings and mares, heavy harness horses and Shetlands. The average quality of the Belgians and Shires was also higher than last year and the Percherons made a more uniformly excellent appearance in all classes than has ever before been known. Improvement in all the draft breeds was especially evident in the classes for American-bred horses.

The imported horses won the principal honors, but the fight for recognition which the home-bred ones made in class after class, landing sometimes right next to the top beside horses that cost long prices in Europe, shows the great progress which is being made by breeders here. Weight, bone and the finish which are gained by skillful feeding were more evident among the home-bred horses this season than at any former show. The art of decorating and showing horses to advantage also appeared to be less of an exclusive accomplishment of the large exhibitors than has formerly been the case. As a result almost every horse made a creditable appearance and was enabled to win all of the recognition that naturally belonged to him. The undeniable tendency of home breeders showing horses at Des Moines is toward a higher class of stock and a more commendable type of horsemanship.

Prof. C. F. Curtiss, superintendent of the horse department, and his corps of assistants, deserve credit for developing a thorough interset in the fair on the part of Iowa breeders of short experience as well as among the exhibitors of national reputation. Furthermore, the extensive work of handling the many large classes of horses is done according to a system which avoids friction and delay.

PERCHERONS AND FRENCH DRAFTERS.

The Percheron show had a decidedly Iowa flavor, as sixteen of the twenty exhibitors were from the home state. The four outside stables found competition sufficient to indicate that both in quality as well as numbers Iowa could by herself make a very attractive exhibition of this breed. French Draft horses were allowed to show in the same classes but cut no particular figure in the prize list except that the winning aged mare was a Boulonnais. Altogether the 334 Percherons made the largest collection of the breed ever shown from three states and certainly the most excellent exhibit on the average ever seen at a state fair. Iowa breeders deserve great credit for the large number of typical roomy mares and big heavy-boned clean-limbed colts which they have produced. The showing of home bred horses would have made many a former state fair look cheap by comparison.

It was not an enviable task to assort the winners from the great rings of gray and black, for decisions were necessarily made on small points in many cases of closely matched rivals. John L. DeLancey, Northfield, Minn., and Robert Miller, Stouffville, Ont., worked long and carefully with the evident determination to give every horse his due. They insisted especially on feet, bone, quality and action with size.

A forecast of the magnitude of the Percheron showing was furnished when fifteen aged stallions answered the call. The black Acrobat which bore the Crouch colors to the head of this company, is a massive deep-ribbed horse with ample underpinning and bold action. The Maasdam & Wheeler black standing second was very similar in his top and in masculine character. Next to them stood a thin horse of excellent quality and deep in middle, whose symmetrical mold could not be denied. Of a lower-set, and more rugged build, with substance everywhere, was the dark gray Lamy.

The three-year-olds, eighteen in number, formed a rather more attractive class. The outstanding winner was found in the dark gray Hieroglyphe with which the Burgess stable subsequently captured the championship. He has a magnificent top, bold front, long level croup and ample middle on generous and correctly set timber, and he handles his more than a ton of weight with a light easy grace. The black Naro is scarcely so heavy in bone, but is full of quality and style which with his big middle and weight succeeded in landing him a notch higher than the beautifully balanced Calypso colt Vonmore. This colt, which won third for McMillan & Sons, had scarcely enough fat to clinch his right to a higher place, but this is a growthy youngster with a stretch of frame, well set legs, big feet and bold straight action that should serve him well another year. Fourth fell to a compact strong-boned gray and fifth to a very symmetrical black which some breeders would have placed higher.

FIRST PRIZE PERCHERONS
Iowa State Fair and Exposition, 1910

Less sensational in its quality than last year, the array of two-year-olds lacked only one in numbers and included plenty of difficulties for the judges. Sixteen of the twenty-eight candidates were from the Burgess stable. First prize finally fell to a big-boned muscular gray which most of the ringside had overlooked. A more symmetrical growthier colt, high-headed and bold-going, was the black son of Calypso which stood second. A compact black carrying the weight characteristic of the Burgess colts stood third, while a very substantial dark gray which stood fourth, with stronger ends and middle on good legs and feet, certainly deserved all that he got. So close was the merit of these four colts that even the last one could have been first without much injustice to the others. The ten yearlings were led by a gray on excellent big feet and bone followed by a compact, well balanced Calypso colt and a rangy gray, all three likely looking youngsters. A small class of foals included some muscular rugged growthy ones for the prizes.

The eighteen aged mares excited intense interest. The high-headed flash gray Favorite was brought out by the Crouch firm in the pink of condition and her level top, wide quarters, smoothness and quality were conspicuous, but the judges preferred the big roomy gray Hellen which stood on big bone and feet. The seventeen three-year-old fillies were a grand lot. The gray Himere which later won the championship is an exquisitely molded, compact, muscular filly going flash and true. The black with white hind feet, standing second, is a big wide one with excellent top and bottom. Two-year-olds included an easy winner in the neat typical filly from the Crouch stable, but Alex. Galbraith was called in to settle the disagreement of the judges as to second and third places. Yearlings were acceptably headed by the Calypso filly Pinafore. Only one filly foal was shown.

In the classes for get of stallion and produce of mare Iowa breeders showed a remarkably uniform strong-boned growthy lot of youngsters. The type was right and they had weight as well with three-year-old Calypso and Olbert colts weighing right up to 2,000 pounds; two-year-olds, 1,800, and yearlings 1,500.

BELGIANS.

Ten Iowa exhibitors combined with two from Illinois and one from Indiana to furnish a collection of Belgians exemplifying the best type of the breed. The standard of flat hard bone and wide feet which R. B. Ogilvie insisted upon last year was closely followed by exhibitors in selecting their candidates and the result was some of the hottest competition ever seen in the Belgian classes. Alex. Galbraith, DeKalb, Ill., made the awards with keen discrimination against any weakness in underpinning and full appreciation of the wide compact massive type.

Three grand horses were finally sifted to the top from among the best all-round collection of fourteen aged stallions the breed has ever bruoght out at a state fair. First went to the beautifully balanced Crouch chestnut which stood on strong bone of fine quality and wide feet. Somewhat larger and heavier in bone was the Finch roan, while his mate, also a roan, was not so weighty or level but very wide in his chest and a good mover. Fourth caught a strong-boned chestnut, and fifth went to the brown Coquet, a very nugget of a horse which was fourth last year and has done heavy duty in the stud each season. A strong class of sixteen three-year-olds was headed by a very massive wide-ended flash bay, standing on great bone and feet. Beside him stood a brown of smooth type, very level back and excellent quality, wearing big shoes also. The blue roan at third place followed much the same pattern. A great big roan called Luc de Gon, shown by Crouch was not quite fit and was not placed.

The two-year-olds were not so pleasing a lot and presented more diverse types, but the chestnut at the head of the line was of a substantial compact and big-boned pattern.

AGROUP OF PRIZE WINNERS
Iowa State Fair and Exposition, 1910

The aged mares included the grand deep-chested bay Catherina, one of the wide compact ones, standing on clean big bone and moving splendidly. She was an easy winner in the class and later made an acceptable champion. One of the matronly useful weighty ones was Madame which stood second. Only four three-year-old fillies faced the judge, but they were all good ones. A big wide growthy brown stood first. Her bone was of the cleanest quality as was also that of the more compact, less massive bay standing next. A growthy muscular big-boned chestnut was third. A very beautifully molded chestnut of typical pattern headed the list of two-year-olds and secured the reserve championship for Crouch & Son. Following her was a big deep-middled bay. A smoothly turned light roan on hard flat bone headed the yearling fillies and a very big brown shown by Henry Lefebure stood fourth, just outside the money, because an accident in shipping had effected her action. Two excellent growthy filly foals, owned by J. A. Loughridge, were not brought out for some reason until the class had been judged so only three foals were shown. In the groups Finch Bros. captured every first prize but not without strong competition from the two Iowa breeders who had entries.

SHIRES.

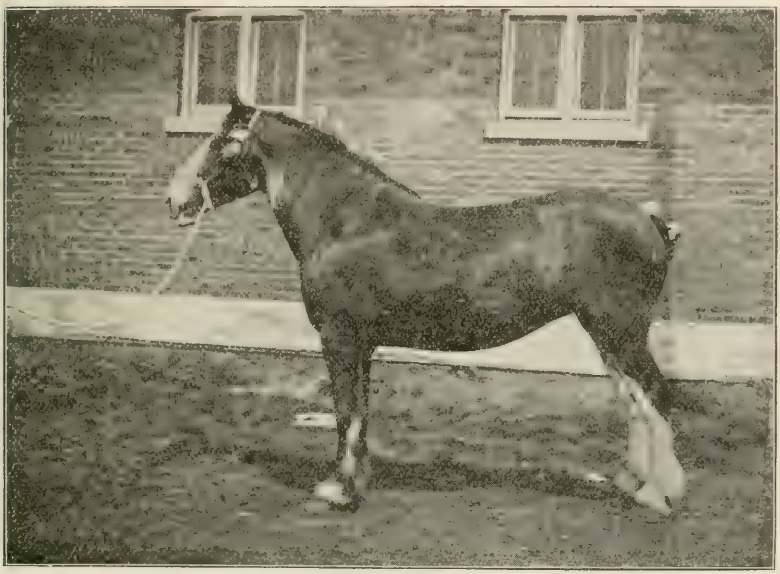
The Shire contingent was especially conspicuous for the smooth flinty bone, silky feather and big feet which were generally borne by the entries and always marked the winners. R. B. Ogilvie, Chicago, Ill., passed judgment on the English cart horse to the satisfaction of all concerned and insisted that quality must accompany substance. Dan Patch easily reached the front among the fifteen aged stallions. This big bay from the Truman stables never looked better in his life although he has been shown before in higher flesh. Even in the good company in which he stood his immense bone and feet, silky quality, bold front and carriage and sprightly action gave him an almost exclusive stamp. His only serious contestant was the low-set very wide Crouch black, built upon heavy timber with abundant silky feather and going strong and true. Two blacks of the characteristic Truman pattern, good at the ground, heavy in bone and active at the halter, stood third and fourth, while a black of similar type was fifth. Except for second place, which went to a well balanced bay of Finch's standing on a strong set of legs, the Truman three-year-olds captured the rest of the prize-list. First went to the very wide massive bay, called Charterhouse Cardinal, that flashed great shoes at every step and was an all-round good one. He stood beside the great Dan Patch in the championship awards. Among the ten two-year-olds the top was found in Truman's Moulton Truffle, a very sturdy bay. The brown from the Burgess stable is a strong-boned youngster and so is the colt of Hopley's that stood third. There were only three yearlings and four foals shown. The Surveyor foal, with which Wm. Crownover won first, is an extra rugged muscular bay, standing on the best of strong legs, an outstanding winner and one of the best foals seen in years.

The aged mares included some royally bred ones coming here with reputations as winners in England. Fuchsia 2d, the London winner two years ago, a daughter of Dunsmore Jameson, is a gray mare of great bottom, splendid quality and a slashing mover, but she had to be content with second place, while the beautifully turned Shelford Pride, imported this summer, was placed at the head of the line, and finally won the championship. She is a splendidly balanced mare, sweet of head, roomy of middle, powerful in her shoulders and quarters and mounted on the strongest kind of timber. The pair make a gratifying tribute to the wisdom with which the Truman importations are selected. The reserve champion female was found in the Burgess first prize three-year-old Prospect Fair Alice, a compact growthy one which moved well. Next to her stood a brown of true Shire build, strong bone and sparse but silky feather. There was only a light showing in the younger classes but the quality was creditable. The Truman champions, Dan Patch and Shelford Pride, each were awarded a gold medal by the English Shire Horse Society and a silver cup by the American Shire Horse Breeders' Association.

CLYDESDALES.

Last year's meager Clydesdale representation was far outclassed in every respect by the excellent aggregation that was brought before Prof. W. J. Kennedy for awards. In his usual rapid manner he sifted out the winners to the general satisfaction of exhibitors, adhering in his decisions to true Scotch underpinning and character with all the weight and substance in bone and muscle that he could secure. The gratifying showing of the breed was in large measure due to the presence of the McLay horses as the list of awards shows. Last year the Wisconsin stable was absent. Another exhibit which added to the interest of this section and contributed to the quality of some of the classes, especially of American-bred horses, was that of Forbes Bros. of Wyoming. The western-raised colts brought out by this firm are a distinct credit to that section of the country and succeeded in capturing a full share of ribbons.

Kelvin Chief, the four-year-old which came to the top among the aged stallions and was awarded the championship, is a brown of great character, substantial in bone, good at the ground, correct in his pasterns, stylish and true at the trot. The other McLay horse, John Humphrey, is of rather a different stamp, smoothly turned and massive in his ends and middle, very strong in the quarters and bone, but as he lacked somewhat in finish of underpinning he was set back to fourth place. Greathill Chief, by Hiawatha, has excellent long sloping pasterns and moves acceptably. Another royally bred one is Goldrock, by Revelanta, which only won third as he was not in the best of condition. The three-year-olds were not a handsome lot or very uniform. A rugged chestnut colt secured the blue for the Wyoming breeders and a much smaller one of the same stud had to go second. The bay colt by Revelanta, with which McLay Bros. headed the two-year-old stallions, is not a big one as yet, but he has the ear-marks of a great horse and was an outstanding winner in the class. He is put together in very symmetrical shape, with strong bone, typical legs and true action. The other colt from the same stable stands on rather smaller bone, but is built on much the same pattern and some thought he looked fit to stand ahead of the rather plain thin bay which was second. Yearlings and foals were not well represented.



CHAMPION CLYDESDALE MARE
Iowa State Fair and Exposition, 1910

Three excellent mares were shown by McLay Bros. in the aged class. The judge preferred the smoothly turned, stylish brown-roan Lady de Bathe which has excellent quality and pasterns and straight action. The bay Miss Fanny is of quite a feminine but less rugged stamp and the light bay awarded fourth made scarcely so good a show in action as the Forbes mare, although she is a remarkably compact one of great constitution and excellent underpinning. All of the prize-winning three-year-old fillies were related in one way or another to stock bred or imported by McLay Bros. They were a very likely lot, especially the wide brown Dorothy Vernon, by Borgue Chief, with her beautiful top and underpinning. Of the two yearlings which secured the first two places for McLay Bros., the first is of very attractive type and quality while the second stands on a little the heavier timber. The first-prize American-bred mare, Princess Goodwin of McLay Bros., which has been shown as a winner for nine years and now has been put to breeding, was brought in competition with the four-year-old Lady de Bathe for the championship and had to be content with the reserve ribbon, owing to her lack of condition, although her intrinsic worth was apparent at every point.

GRADE DRAFT HORSES.

The prize list of the Iowa State Fair for grade draft geldings and mares is the most complete of any fair. Its ample prizes were offered to induce farmers to make a greater effort to produce and develop high-class horses. Last season some very creditable entries appeared and this year there was a distinct advance in the number of worthy contestants. R. B. Ogilvie, Chicago, Ill., inspected the classes with his usual discrimination in favor of the substantial enduring type. In order to make this essentially a show of work horses he suggested that the pure-bred mares be withdrawn from the open class for horses at the halter as their opportunities for winning honors had been abundantly provided in the show of breeding animals. Accordingly the competition in this class was narrowed down to geldings and grade mares. The winner in this class was the gray off-leader of the Crouch six-horse team. He has grown a bit since last year and has preserved his quality in exceptional fashion. His big clean bone, powerful chest and bold action are remarkable.

In the classes for Iowa farmers some very drafty types were shown with a preponderance of Belgian grades from Polk county. A big bay mare with great middle and feet led the aged mares. The well known roan mares Castille and Strawberry won first as best farmer's pair owned in Iowa and third in the open class. The Crouch roan swing pair was first in the open class for pairs with the chestnut wheelers second and a pair shown by J. A. Loughridge fourth. The Crouch four and six had no competitors although they were fit to the minute and with their excellent handling made a most attractive exhibition.

THE HACKNEYS.

Only a small showing of Hackneys was submitted for approval under the eye of Alex. Galbraith, DeKalb, Ill., but some noted horses were included. The four-year-old chestnut International represented the Crouch stable at the top of the aged stallions. He was a winner on the other side before his importation last year and stood first as a three-year-old at the Interantional at Chicago last fall. He goes with great style and dash. Tollington is smoother-turned over the croup, but is rather a heavy-made horse. In the three-year-old class the famous Crouch colt Pockington Protector, by Royal Denmark, had things all his own way. Last year he was second here and at Chicago, but his winning mate died last winter as a result of a hard fall. This colt has developed into a horse of elegant mold and sufficient substance and goes like a house afire. The mares were not such a noteworthy lot.

SADDLE HORSES.

There was a creditable collection of saddle horses presented before Gen. J. B. Castleman, Lexington, Ky., for prizes, but the old-time famous winners were seriously missed. The greatest attraction of the saddle horse section was the noted champion mare Carolina of Gen. Castleman, which was not entered in any of the classes but was shown under her veteran owner as a special attraction at the evening exhibitions. This was a feature of great educational influence as well as popular interest. The real art of equestrianism is rare among the inhabitants of Iowa and saddle horses of even moderately acceptable type and manners are still more unusual. Thomas Bass of Missouri had the most complete stable and won most of the important awards as shown by the subjoined list. A. S. Burr, of Illinois, also had some excellent horses. The champion stallion, mare or gelding is the stallion Rex Chief A., a mannerly, full-made chestnut, scarcely so stylish and lengthy of neck as the judge desired, but going his gaits creditably.

OTHER LIGHT HORSES.

A few German Coachers were shown by J. Crouch & Son, La Fayette, Ind., without competition. Included in the lot were the seven-year-old stallion Minno, the three-year-old Antonious, the two-year-old William and the five-year-old mare Freifrau, all looking fit for any show and moving in attractive form.

Standard-bred trotters were shown by a number of Iowa exhibitors and by J. R. Peak & Son of Illinois. These were judged by W. A. Dobson, Des Moines, Iowa. The principal prizes were taken by the Peak entries, including first in all the stallion classes except foals, first on three-year-old and two-year-old fillies, get of stallion, produce of mare and champion stallion. The foal classes were both won by L. H. Pickard and the mare championship was taken by Horace Anderson on the aged mare Winnie Blake. Morgans were taken before Geo. M. Rommel, Washington, D. C., for the distribution of prizes. It is noteworthy that the animals brought before him were of greater substance, range and finish than has been the case in some previous years. American carriage horses were shown before W. A. Dobson. Although there were a number of entries in various classes there were few in which he considered that the merit justified the awarding of a first prize.

Of roadsters and heavy harness horses there was a large exhibit and the character of the entries was unusually high. Thos. Bell, Chicago, Ill., and John Garrison, Des Moines, Iowa, tied the ribbons. They considered that some of the entries were equal in appearance and performance to candidates for honors at the New York and Chicago shows. The horses were nearly all of standard-bred stock. The principal prizes in the roadster and runabout classes were taken by J. R. Peak & Son of Illinois; Thos. Bass of Missouri, and O. J. Mooers of Missouri. Among the high-stepping horses the most conspicuous entries were those of Roebuck Farms of Indiana; Trumans' Pioneer Stud Farm, Bushnell, Ill., and J. R. Peak & Son and V. R. Crane, both of Illinois.

THE SHETLAND PONIES.

Never before has such a magnificent exhibition of Shetland ponies been seen at a state fair, or probably anywhere else. The crowded rings contained not a single discreditable candidate for judicial preference. Some larger aggregations of ponies have been assembled before, but compared in quality and bulk combined this would make some of our national exhibitions look like county fairs. J. Deane Willis declared that never in England had he seen anything to compare with this exhibition of the little horses. So interested did he become in the workout of the nineteen single ponies in harness that it was with great reluctance that he left the ring to meet other engagements. The type chosen here is somewhat less blocky but more sprightly and flash than the English winners, and the ability of the little fellows to step away high and fast round and round the ring like clockwork captured the heart of the English Short-horn breeder.

There were 160 ponies, and with the repeated appearance of the same animals in breeding, harness and saddle classes Prof. W. J. Kennedy, Ames, Iowa, had an arduous task in selecting the winners. He sought a trifle more substance and bone than have sometimes been given prominence at American shows, but for the most part the ringside talent and the exhibitors were satisfied that no more worthy representatives of the breed could be chosen. Some idea of the keen competition is apparent when it is considered that there were twenty-four aged stallions lined up before the judge; thirty-three mares, fifteen of which were probably as good as any ever placed here before; thirty foals, ten of which were placed; nineteen single ponies in harness; nine pairs, eight tandems, four four-in-hands and a whole arena full of ponies under the saddle. The saddle ponies excited no end of fun as a number of inexperienced children of light weight and tender years had been placed on the smaller ponies and their mounts scurried hither and thither in wild confusion. One little fellow perched up in a diminutive model of a western stock saddle on a wee two-year-old furnished a veritable bucking exhibition in miniature. Twice the little fellow remounted amid the wild applause of his efforts to cling to the playful Shetland, but the third time around the ring the bucking performance sent him rolling on the tanbark a frightened though uninjured boy.

THE HOMESTEAD.

DES MOINES, IOWA.

The 1910 Iowa State Fair, held at Des Moines last week, will go down in history as having the largest and best live stock and machinery exhibits of any state fair held in the fifty-five years which Iowa has been instructing and entertaining its citizens by exhibitions of its resources and achievements. Other fairs have had larger attendance, but no state fair ever held in Iowa before has exhibited so many time-saving, money-saving and labor-saving devices and machines or has assembled so much high-grade live stock. Iowa has come to occupy a proud and envied position in the front rank of agricultural states. Its farmers have reached a state of prosperity and material comfort second to none. Year after year its millions of fertile acres have gone on producing crops to break its own record, fill the granaries and feed the hungry of the world. It is fitting that Iowa's state fair should grow and prosper in keeping with the state and its citizenship. It is to the eternal credit of state and citizens that no niggardly policy has been pursued as regards the state fair. It is to the eternal credit of the state fair management that the show has been kept up to a high standard as an educating factor making toward a higher plane of prosperity and comfort.

The Iowa farmer believes in the conservation of himself and his live stock. He has learned that the genius of man is inventing and perfecting devices and machines which make farming easier and simpler. He has learned that money invested in modern agricultural implements is money cast upon the waters to return many fold before many days have passed. He has learned that it is better to save his horses and himself and depend on electricity and gasoline. He has learned that neither himself, his wife nor his children need be enslaved to the endless round of multitudinous chores, but that mechanical chore-workers are to be had for the products of a few acres. He has seen the cumbersome machines of his father perfected and simplified until today they do the work of a dozen, a score of men, quicker and better than man, with all his genius and persistence. The Iowa farmer has been quick to realize the possibilities of machinery. It was therefore eminently proper that the 1910 state fair should exhibit such a quantity and diversity of agricultural implements as caused even the best posted to marvel that so much has been done to harness the elements and the mechanical forces to do man's bidding. Acres of ground were covered at Des Moines last week with agricultural implements of all kinds. There was no more interesting exhibit, none which attracted greater crowds and attention. Chugging, churning, chortling machines puffed and snorted their busy way from early morning until late at night and Iowa farmers by the thousands looked on, marveled, learned and bought. The machinery exhibit last week was fully 25 per cent greater than at any previous fair. Iowa leads the agricultural states of the nation as a market for agricultural implements.

Iowa stands second to no state in its admiration of and demand for pure-blooded live stock. Its annual state fairs have come to be the greatest cattle and horse exhibits which the world knows. "Beside this the Madison Square Garden show looks like a county fair," declared an expert horseman, as he surveyed the vista of splendid animals at Des Moines last week and compared the exhibit with the New York one. Other men equally well posted, expressed the same opinion. "The finest in the world," Mr. J. Deane Willis, of England, premier stockman and cattle judge of Europe, remarked, as he looked down the line of cattle drawn up for judging. And so on throughout every class. The Iowa farmer is in the market for the best blood. The world has learned this and each year it sends to Des Moines the pick of its herds and flocks. The competition is strenuous and visitors to the Iowa State Fair are given an opportunity to study the points of animals which are without peer in all the world. All this is having its visible effect in raising the standards for the state. Year by year the average is becoming higher. The state fair is essentially an educator. In no department or phase of farming is this better or more conclusively proved than in this matter of bettering the state's live stock. These annual object lessons cannot fail to be without lasting value. The Iowa farmer of tomorrow is going to know good stock and going to own it. The state fairs are awakening an interest and supplying the demand.

The fair this year was a financial success, although the margin of profit was small. The fore part of the week the management was visibly worried, but as the weather improved and the attendance increased the ogre of a deficit vanished and "all's well that ends well." The Iowa State Fair has come to be practically an all-around exposition. It is conducted at immense expense. It is necessary that at least $125,000 be turned into the fair treasury in order to be on the right side of the ledger. Thanks to the prosperity and the generosity of the Iowa farmer and to the immense number of exhibits the fair this year was a success from a money standpoint. But there will be little to turn into the general treasury for the future. The largest day's attendance was approximately 60,000.

The weather for the greater part of the week was unfavorable. The first three days were marred by frequent rainfalls which materially cut down the attendance. The latter half of the week, however, the conditions improved. While the rains made a visit to the fair at times uncomfortable the cool weather which accompanied them was a blessing. It has been the usual lot of the Iowa State Fair in the past to experience extremely hot weather. This year, however, the mercury did not rise above the eighty mark for any considerable time throughout the entire week. This made it possible to visit the fair in comfort. Thanks to the good condition of the buildings and the grounds the rain and mud did not cause any inconvenience, once the fair grounds had been reached. This year's experience has proved that it is highly important that the buildings should be substantial and permanent and connected by well-graded highways and permanent sidewalks. Within the past few years the Iowa State Fair Association has made many improvements, none of which are more important than these permanent ones, which provide for public comfort during inclement weather.

The state fair is the annual opportunity of thousands of citizens to personally meet the governor and the high state officials. State day this year was a grand success. The state officials lined themselves up on the porch of the Administration building and shook hands with thousands of loyal Iowans. The receiving line was headed by Governor Carrol and President Cameron of the State Fair Association, and included almost all of the high officials whom the people had elected and in whom they naturally take an interest. It is an opportunity for the voters and their families to study personal appearances and characteristics of the men high in office. It results in a get-together spirit which cannot fail to be of value as the years pass. The officials are invariably gracious and the citizens are only too glad of this chance to meet them as man to man rather than as voter to candidate.

The old settlers of the state came in for especial attention. Not only was one day set apart in their honor, but favors were shown them throughout the entire week. It was an interesting sight to see the grizzled pioneers of a half or two-thirds of a century ago gathered together in the shade of the modern buildings, within sight and sound of the wonderful mechanical devices and machines of today, discussing the great changes which have been wrought in Iowa since they came to break the prairie and lay the foundations of the vast empire. There were men at the fair who had come to Iowa in the thirties and forties and who remembered as vividly as though it were yesterday the severe storm of the winter of fifty-six. These men delighted in telling stories of their early adventures. They have seen great changes in the state of their adoption. It is eminently fitting that they should be accorded honors by the state fair, which is itself considerable of a veteran, but which is younger than many Iowa citizens who visited it last week. It is an object lesson to the youth of today to see the ox cart of yesterday driving alongside the automobiles of today. Nothing could better prove how rapidly history is being made in these piping times of prosperity.

Credit is due Commissioner Barney and the officials of the fair association for improving the food and eating conditions on the grounds. The time was, in the not far distant past, when anything was allowed to be served as food and drink for the people. Adulterated and even diseased food was permitted to be brought upon the grounds and served in various forms, while the unsavory odors which emanated from the various refreshments booths were enough to turn the stomach of the average person, hungry as he or she might be. This year, however, thanks to the pure food law and the careful work of Commissioner Barney and others, the food served was wholesome and palatable. The booths were kept in a clean condition and the barkers were held down to somewhat near civilized action. It is highly important that the people who visit the fair should be given clean, wholesome food and drink. This was done better this year than ever before.

One of the innovations was the contest for honors in individual farms, this taking the place of the county exhibits which were dispensed with for the first time. This feature of the fair showed splendid results. The exhibits were numerous and highly creditable. It is more important that individual farms should be recognized and should be brought to a high state of perfection than that the ninety-nine counties of the state should vie with one another to secure honors. The prosperity and the future of agricultural interests in Iowa depend far more on the individual than on the county. There is every reason to believe that this individual farm contest will prove one of the most attractive and valuable features of future fairs.

The crowds were orderly and well handled. No serious trouble of any kind occurred on the grounds throughout the entire week. Superintendent Wentworth had his large force of officers well in hand and was able to cope with every situation as it arose. There were fewer complaints of overcharging than ever before and the summary hand of the law snatched up those offenders who were not satisfied with a reasonable profit. Superintendent Wentworth is deserving of praise for the way the crowds were handled and for the condition of the grounds. The work was never better done.

The game department "zoo" attracted large crowds. It was a new feature and a pleasing one. The exhibit of 2,500 pheasants attracted the greatest interest. The state game warden intends to do all that he can to stock the state with game birds. To this end money secured from the licensing of hunters was speant in buying pheasants for free distribution to farmers who would agree to take good care of the birds. The pheasants were distributed the closing day of the fair and several times the total number could have been given away. It is highly important that these birds be given the best of care by those who secured them.

CATTLE—BEEF BREEDS

The cattle department of the Iowa State Fair was strong from top to bottom. Superintendent Pike, who succeeded Mr. Packard in the cattle department, had his division of the fair systematized in splendid shape. In nearly all of the breeds entries were made from all the principal corn belt states and in practically every case, breeders who made entries reported with their cattle when their classes were called. The experiment tried out this year in having a foreign judge pass on one of the principal breeds, resulted most satisfactorily to all concerned. While a little nervousness was shown in the beginning over the work of Judge Willis, this soon disappeared as he worked down the classes and toward the end visitors and exhibitors alike felt that the difficult task had been assigned to a master hand. There were sufficient numbers in all classes to make an exceedingly good showing, while in the matter of quality, the standard set at Iowa will not be excelled during the whole show season. A complete list of awards in all classes is given on the following pages and we commend the list to all who have a special interest in one or more breeds. With few exceptions the prizes as given are an absolutely accurate indication of the merits of the animals according to the standard fixed by all good judges.

SHORT-HORNS.

Iowa State Fair visitors have certainly never seen a better display of Short-horns in Des Moines than that which was presented to them a week ago. Compared with the exhibit of a year ago it was not only larger, but better. In 1909, but eleven herds were in line, whereas twice that number contributed entries to this season's classes. Between 145 and 150 animals came before the judge in competition for the individual premiums and the groups were correspondingly numerous.

To the Honorable J. Dean Willis, of the county of Hampshire, England, fell the pleasant task of placing the entries. This eminent stockman is known wherever the breed is known as one of the greatest of breeders and keenest of judges. He is following in the footsteps of that master breeder, Amos Cruickshank. His own herd of Shorthorns was, in fact, founded upon animals selected from the Cruickshank herd. Easily one of the greatest of the Willis masterpieces was the production of Whitehall Sultan, for to him very largely belongs the credit.

The work of Judge Willis has never been surpassed in the Iowa arena. In every ring he had a large number of animals to place, but he went at his work in such a manner as to assure the greatest accuracy combined with sufficient speed. His method is that of elimination, returning to their stalls animals which are clearly outclassed by those "higher up." This plan gives him the freedom of the ring when making the closer discriminations. The feature of the showing of aged bulls was Uxor Prince, Harding's new bull. He is but lately over from England, having appeared at the British Royal, where he was the recipient of the fifth premium. Like Whitehall Sultan he is a silky white and will likely grow into much the same sort of a sire as the old Anoka champion. Uxor Prince was dropped December 12, 1906, was sired by Tarrell Uxor and from Snowball. Expert judges have pronounced him the best bull for America shown in Britain this season. In the hands of Messrs. Harding and Sims he will round out year by year into better and better form as has been the case with not a few of the Anoka leaders. Straight Marshall, a son of Whitehall Marshall, in the absence of Uxor Prince would have qualified for at least two of the very best ribbons. His closest rival in the aged class was the well-turned red, Gallant Knight's Heir. One had but to trace the genealogy of many of the winers to concede that Cumberland's Last has been a great sire. Among the bull calves was a pair of twins of which any breeder might justly be proud. Mysie's Champion, in first place, and Mysie's King in fourth, are twin brothers. The former is a most captivating youngster and so pleased the judge that he awarded him the junior championship. The aged cows, Sinissippi Rose and Queenston Bellona, have stood side by side at the Iowa State Fair, but Imp. Ballichen Charming Maid crowded in between them this season. The

Elmendorf matron has come through the year in good shape, but she was not showing in good enough form to defeat the Straight Marshall heifer, Miss Marshall 2d, for the senior championship. The younger cow is a thick and blocky roan of winning quality and typiness. Her election to grand championship won general approbation.

HEREFORDS.

The Iowa State Fair attracted breeders of the "white faces" from every direction. Many ribbons were awarded the cattle from Colorado, Indiana and Missouri. Iowa breeders are making good reputations for themselves in the show ring and the Iowa specials are doing great good in bringing Iowa-bred exhibits to the fair. The show was large in numbers and excellent in quality. Poorly-fitted stuff was conspicuously absent. Six aged bulls were shown and Curtis, belonging to J. O. Bryant, Savannah, Mo., had no walk-away with the blue. Van Natta's Prime Lad 9th had greater depth of flesh over back and ribs than those below him and showed very good breed type. Eleven junior yearlings were shown with Discounter, belonging to S. L. Brock, Lake Geneva, Wis., standing first. He is a very heavy-quartered bull, straight in his lines and has wonderful depth and width of loin. The senior bull calf class was comprised of eleven individuals. They showed wonderful development and Donald Lad, winner of the blue, will undoubtedly develop into a great sire. The cow classes contained several old-time winners. The aged cow class ribbon went to Lady Fairfax 4th. She is very firm and has fine type. Miss Filler, a winner last year, went to third place. She is a fine cow, a little light in color and is in quite high condition. Seventeen head showed in the junior yearling heifer class. Harris' Princess 125th won the blue with a very close second, Iva 3d, the property of Van Natta & Son. Makin Bros.' Gladness showed in fine form. She went to fourth place, but with more finish and feed could easily stand higher. She is the right type and will undoubtedly be heard from again. In the senior yearling heifer class eighteen were shown with Van Natta's Donald Lass 4th at the head. The judge worked a good while in picking the winners here, but his decisions met with general satisfaction. Harris & Son's Repeater, a two-year-old, won the champion ribbon in the open class. Cyrus A. Tow's Principal 6th was champion of Iowa. Lady Fairfax, the senior champion cow, also the grand champion, is the property of Warrent T. McCray, of Kentland, Ind. O. Harris & Son's Gay Lad 6th won the purple both as junior champion bull and as grand champion. With the blues and reds divided quite evenly among the different exhibitors, judging the herds was a difficult task. Nine exhibitors' herds showed, Harris & Sons winning the blue ribbon. Eleven calf herds showed with Van Natta winning first. Lovers of the Herefords, the "table backs," had a rare treat in seeing the show at Des Moines. R. J. Kinzer, Manhattan, Kan., judged the Herefords.

ABERDEEN ANGUS.

In the "doddie" exhibit one could see some of the best quality that has been in the show ring in recent years. The contest for the ribbons was between Battles, McHenry, Binnie and Miller of the "old guard" and a number of other strong exhibitors made the race for ribbons very interesting. The classes were not large, but the individuals were very high class and no ribbon winner had a "walk away." Five bulls were shown in the aged class. The blue was finally placed on Oakville Quiet Lad, a four-year-old bull, the property of Otto V. Battles, of Maquoketa, Iowa. The conformation and beef type of this bull are seldom seen and his finish was wonderful. He carried a broad, deeply-fleshed loin and was filled well in hind quarters. Such sires as he is are the makers of Iowa's reputation as an Angus state. The entire exhibit of Angus was owned and largely bred by Iowa men. In the two-year-lods, McHenry won first and second with two typey bulls in fine finish. The senior yearling, owned by M. D. Korns, showed very good development for age. He possessed great width and was especially strong in hind quarters. Battles won first on St. Blaise in the junior yearling class. McHenry's senior bull calf, Protine, won first in his class. Ebony of A, the fourth-prize calf, belonging to J. V. Arney, Leon, Iowa, with more flesh would have stood much higher in the show. A. C. Binnie's Black Elmar stood second and W. J. Miller's Kenwood Echo in third place. Peter Pan, Binnie's junior bull calf, is a dandy. He was in fine fix and has the makeup of a wonderful bull. In the cow classes the blues were well scattered. In the aged cows Barbara McHenry 24th took her accustomed position at the head. Battles' cow stood second easily with Korns in third place. When Judge O. E. Bradfute had finished placing Battles' Eileen first in the two-year-old class, with McHenry second and Binnie third, he said, "It's the hardest class I've had." Battle's heifer was very smooth and straight in her lines and showed wonderful character and type in her head. There was another hard fight in the junior yearling heifer, when McHenry captured the blue and Battles the red. Third went to R. M. Anderson & Sons, Newell, Iowa, on Jilt 56th, a strong, typey heifer, but she was not in so high condition as those above her. A. C. Binnie won first on his junior heifer calf. Battles finished second and O. E. Briney, Marion, Iowa, third. Otto V. Battles' aged bull was senior and grand champion bull. McHenry's Protine senior calf won purple as junior champion bull. Barbara McHenry held her title as senior and grand champion cow.

POLLED DURHAMS.

The showing of Polled Durhams at Des Moines was even better than usual, for the Iowa breeders were ably assisted by two out-of-the-state exhibitors. The number of entries in each class was relatively small and as a result the merit of the exhibit was correspondingly high. The herd of Messrs. W. H. Miller & Sons, of Mulberry, Ind., contributed the largest number of prize winners, but only in a few instances were they deprived of close competition. The entries from the "Hoosier" state were, for a large part, in the very pink of condition and the judge experienced difficulty in not being influenced by their superior finish. The judging was done by Mr. T. F. Flynn, of Des Moines, Iowa, who has a wide acquaintance in Short-horn and Polled Durham circles.

Sugar Hill Marshall, the Iowa champion in 1909, and Marshall of the Mound, senior champion at the last International, met in the class for aged bulls and the latter carried away the most coveted ribbon. Both are well patterned bulls, but Marshall of the Mound is lower and more blocky and compact. Mr. Flynn found him clearly entitled to the senior and grand championships. Lord Baron, presented by Mr. Marti, in the two-year-old ring, seems of a very likely sort. Five useful aged cows were shown, but Buttonwood Jenny Lind 4th was an easy favorite. A daughter of Marshall of the Mound, Lady Marshall by name, headed the two-year-olds and defeated a senior yearling, Bell Boy's Cleopatra, for the grand championship. Both are extremely promising heifers and certainly should be heard from again. Taken all in all, the Polled Durham exhibit was one of unusual merit. The breeders of these cattle are certainly making great strides. Their ambitions to have a breed well fixed in type and possessing many of the same excellencies sought for in the Short-horns are fast being realized.

GALLOWAYS.

For a number of successive seasons the same three Galloway breeders have appeared at Des Moines with their herds of "Shaggy backs." These men are loyal to the breed of their choice and year by year bring out strings of cattle which do full justice to it. Perhaps no breed on the grounds was represented by so uniformly high-class entries, there being practically no "tail enders" in the entire exhibit. For the second time "running" Mr. E. T. Davis, of Iowa City, Iowa, judged the classes. His work was done with painstaking care and his ratings were favorably received on all sides. Captain 4th of Tarbreoch was no less a sensation in the classes this season than upon former occasions. He is coming five and certainly has a great future ahead of him. This season he was favored with competition upon each appearance, but his position was scarcely in doubt at any time. A grand good cow, Floss 2d, lined up in the aged group and the judge called for her again when distributing the championship ribbons. In fact, Mr. Davis only found one female in the entire exhibit which he really liked better. Ladylike, a junior yearling, was easily the choicest thing among the cows and heifers. This daughter of Captain 4th of Tarbreoch would be hard to fault, for she seems to embody about all that a Galloway man could wish for in a single package. She is low down, thick, smooth and in every particular quite typical of the breed.

RED POLLS.

The Iowa breeders left it to an exhibitor from Nebraska and another from South Dakota to give the Red Polls representation at their state fair. The two herds put up a very creditable display, but the entries would all have shown up to better advantage had the classes been better filled and the contest more spirited. Mr. James W. Martin, America's foremost Red Polled cattle judge, distributed the premiums. His work is always of such a nature as to leave no opportunity for criticism. Upon none have weighed more heavily the responsibility of advancing the breed upon standards which provide for permanency. This judge is perfectly familiar with the type which is capable of returning the greatest profit to the breeder and this was the sort he sought for in selecting the winners of the Iowa State Fair premiums. As might reasonably be expected this early in the season many of the animals were scarcely in real good show form.

Mr. Martin found it necessary to retire Cremo from his position at the head of the aged bulls. His type is quite as pleasing as it ever was, but the old campaigner was out of condition and so had to step aside for Rutland. As a Red Poll model this bull scarcely measures up to the standard set by the older bull; he is, nevertheless, well lined and carries good indications of combining meat and milk-producing tendencies demanded in a sire of this breed. The three-year-old cow, Florence, was perhaps as good an example of a "double decker" as appeared in any of the classes. Her form bespeaks dairy performance and yet her conformation does not incline to disfiguring angularity. A young thing of likable proportions and bearing the same name, contested with her for the grand championship, but the balance tilted in favor of the senior entry.

FAT STEERS.

The Iowa State Fair management provides a very liberal classification for fat steers—pure bred, grade and cross bred. As a result a very representative showing of the several leading beef breeds is assembled. More breeders and feeders appeared this year than in previous seasons. The Angus entries were passed upon by Mr. O. E. Bradfute, of Xenia, Ohio; the Short-horns by the English judge, Mr. J. Deane Willis, and the Herefords by Professor R. J. Kinzer, of Manhattan, Kan. One of the features of the fat classes was the grade Hereford, Paragon A., exhibited by Mr. S. L. Brock, of Lake Geneva, Wis. Under the watchful eye of his skillful feeder this entry should be in fine fit by the close of the season.

CATTLE—DAIRY BREEDS.

GUERNSEYS.

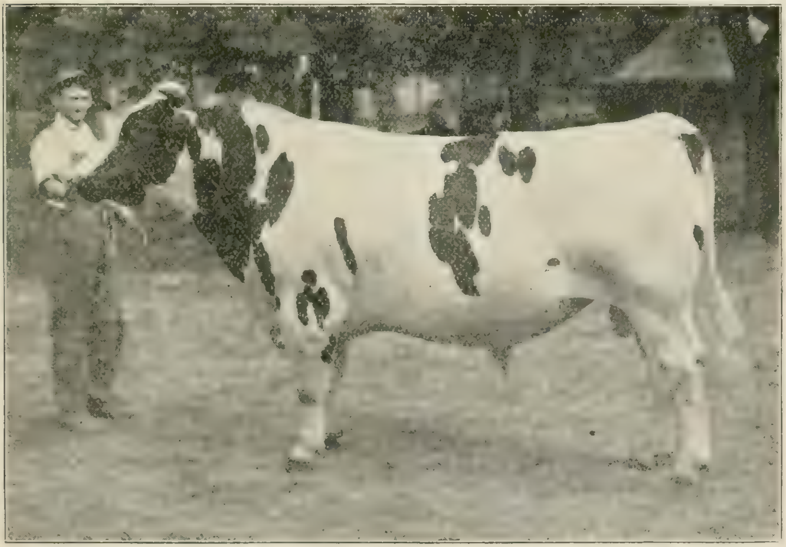
One of the best and most interesting displays on the grounds was that of Guernsey cattle. Not as many herds were shown as a year ago, but each of the groups which reappeared have been nicely reenforced during the year. The judge, Prof. W. H. Pew, of Ames, Iowa, was looking for the entries of quality, and found a fine assortment in nearly every class. The alignment of aged bulls was a most pleasing one. At the head of the line stood the champion, Imp. Lord Marr. This proud fellow is endowed with style in abundance. With it he combines great quality and to judge of his breeding tendencies by the get shown in several of the classes, he is going to prove a great breeder. A bull of uncommon capacity and general dairy excellence is Golden Ben, that stood in second place. By his side was Glenwood's Combination 5th, a son of Glenwood Combination and Lucretia's Daughter. This grandly bred bull is modeled somewhat along the same lines as Lord Marr, while the fourth prize winner is still of another type. Boisterous is a low-down fellow, not at all unlike the well-known show bull, Robiana's Standard. The junior champion of the male contingent was uncovered, in the yearling group. Dairy Maid's Pride of Iowa was sired by Stranford's Glenwood and is, therefore, a grandson of Glenwood Boy of Haddon, a name known to all breeders of Guernseys. His dam was also sired by this same bull. He is truly "a marvelously bred bull in producing lines." Among the bull calves appeared two youngsters of unusual prominence—Meriann Son of Lavourne and Stranford's Glenwood of Pinehurst. The former is a son of Raymond of the Preel and the latter is a "Pinehurst" product. Mr. Pew had a hard task assigned him in arranging the aged cows. Duenna B, the champion of a year ago, was in line, as was Iowa's most famed cow, Dairy Maid of Pinehurst, and Mr. Marsh's Glencoe's Bopeep, which was expected would prove a strong contender for one of the very best places. The dual arrangement, however, found Lalla Boots of Chantilly 3d at the top, with last year's champion in second, Dairy Maid third and Glencoe's Bopeep just inside the money. The winner of the Iowa contest was, of course, the center of attraction, and well she might be when we consider what her performance has meant and will mean to dairying in Iowa. It will be remembered that by producing 14,600 pounds of milk, 860 pounds of butter fat and 1,032 pounds of butter in a single year, she has "swept the board" in the Iowa Cow Contest. What is of more moment, she has taught many a corn-belt farmer that to succeed in dairying he must equip himself with profit-producing cows.

JERSEYS.

Although but four herds of Jerseys were shown at the Iowa fair, the breed was, nevertheless, most worthily represented. Mr. C. T. Graves, of Maitland, Mo., who has had a wide experience with dairy cattle, both in the capacity of breeder and judge, was called upon to make the awards and repeatedly expressed himself as highly pleased with the entries brought before him. Messrs. Dixon & Bruins, importers and breeders, had the largest number of animals in their herd which conformed to his ideal. Their aged bull, Beauvoir's King, had no difficulty whatever in winning special courtesies in the shape of blue and purple colored ribbons. This proud son of Sultan of Oakland, while not a large animal, is nevertheless a very impressive chap. Of course, he is far from a stranger to the show rings of the middle west. A year ago he appeared at several of the leading state fairs and finally at the dairy show, and upon each occasion won merited recognition. He is starting the 1910 circuit in comfortable condition and will likely continue a particular favorite. The five-year-old, Nesta Cannon, was clearly entitled to lead the matrons, although in standing in first position she deprived some very good cows of the place. Eminent's Leda is a cow of pronounced dairy qualities. This daughter of old Nesta and Money Cannon is of an extremely typey sort. She is all cow, having quality and dairy temperament in great abundance. Her several excellencies gave her undisputed claim to senior and grand championship honors. It would be hard to find a yearling heifer anywhere which would surpass Belmont's Pride. With size she admirably combines a rugged constitution and great promise of dairy capacity. She is of the sort which can "mix" with the best in the show ring or remain at home and do full duty in a working herd. The production of animals which properly combine "beauty and utility" is the ambition of practically every breeder. To only a comparatively few is given the ability of effecting the combination.

HOLSTEIN-FRIESIANS.

Notwithstanding the fact that but two herds of Holstein cattle were shown at the 1910 Iowa State Fair, the farmers of the corn belt are taking far more interest in dairying than at any time in the past. Only a few months ago a dairy special train traveled the state for a few days and literally "reached" thousands of farmers who heretofore had been comparatively indifferent to this great industry. Many of these men either have or will start herds of dairy cattle, but it will be several years before they will be able to present show herds. Meanwhile, Iowa State Fair visitors must depend upon the "old guard" and out-of-the-state breeders to set before them examples of the great Dutch profit-producing breed. The herd of Mr. W. B. Barney & Company, of Hampton, Iowa, did not appear and, naturally enough its absence from the state fair barns was most noticeable. Prof. W. H. Pew, of Ames, Iowa, did the judging. His work was characterized by great thoroughness. Quality and dairy temperament seemed to influence him greatly in his decisions. Among the



CHAMPION HOLSTEIN BULL
Iowa State Fair and Exposition, 1910

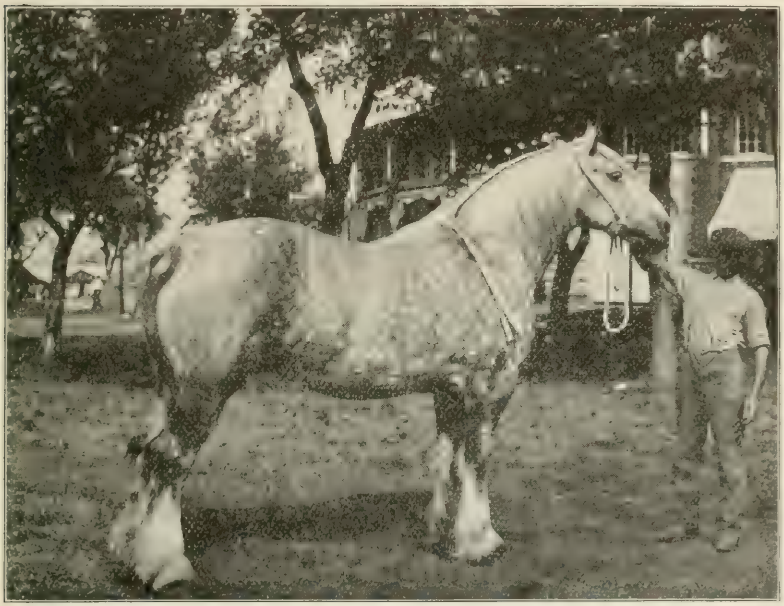
bulls, Groveland Inka Hijlaard proved the most attractive. He is still a youngster, being but a two-year-old, but he possesses the vigor, constitution, capacity and quality which qualified him to receive premier honors. A stable mate Lady Ona Hijlaard, had but little difficulty in working her way to the front in the ring of aged cows. She later gained further recognition by being declared grand champion of the breed. This matron has not only demonstrated her worth in the show ring, but has proven equally valuable as a breeder as well. It was upon her produce that the judge was pleased to place the first award. The cow that is capable of serving man in at least these two capacities is the cow which will receive the greatest welcome in the corn belt.

AYRSHIRES.

The Ayrshire show was made by one exhibitor, Mr. Adam Seitz, of Waukesha, Wis. He was to have been assisted by Mr. W. W. Blake Arkcoll, of Paoli, Pa., who unfortunately was unable to appear. It does not follow, however, that because only one herd was exhibited the display was not intensely interesting and highly representative of the great Scotch breed. On the contrary, the Seitz Ayrshires proved an extremely attractive feature of the dairy cattle show. It should be said to the credit of Ayrshire breeders who have shown at Des Moines during the past two years that the breed has been most creditably represented on each occasion. These breeders have made friends for the Ayrshire cow in Iowa. Eventually the breed will be given the support which its inherent merit entitles it to rceive. Perhaps only a few of those who saw the show at Des Moines last week realized that in Bargneock Gay Cavalier they saw one of the most noted Ayrshire sires on the American continent. As a two-year-old this bull won first at the Glasgow contest. He was imported from Scotland and shown at the Alaska-Yukon-Pacific Exposition where he won premier honors. This spring he was exhibited at Sherbrooke, Quebec, and there in that stronghold of the breed he again gained the same signal recognition.

HORSES.

All departments of the Iowa State Fair this year were so large that it is, difficult to make comparisons. It is, nevertheless, true that the horse division showed more improvement over its own record of the past than any other department. Prof. C. F. Curtiss, the superintendent, deserves the highest commendation for the manner in which he has worked that department up to its present high standard. Its growth has already resulted in crowding the horse quarters to the limit and the showing arena to a point far beyond the limit. Professor Curtiss has always advocated the raising of a sensible type of heavy harness horse, and by the emphasis which he has placed on this branch since taking the superintendency of this department he has brought that class up on a point which almost amounted to a sensation this year. It is doubtful if any other fair or exposition on the continent will show as many good standard breeds, Morgans and carriage horses as were shown this year at Des Moines. In order to take care of future growth, some provision should be made for showing this class of horses. They were crowded almost off the grounds this year in order to find show space, thus denying to the public the opportunity of seeing some of the most attractive classes at the whole fair. The matter has come to such a pass that we believe the state ought to step in and erect a building large enough to meet the requirements of exhibitors and with seating space enough to meet the needs of visitors.



A PRIZE WINNER
Iowa State Fair and Exposition, 1910

CLYDESDALES.

The admirers of this good Scotch breed of drafters were gratified to find an exhibit of such high quality. Although the classes were not large, competition was keen in many cases. The judge, W. J. Kennedy, made decisions that met with general satisfaction. Kelvin Chief, the four-year-old stallion owned by McLay Bros., the veteran breeders from Janesville, Wis., won first in his class and champion. He is a powerfully muscled stallion, closely coupled, and his underpinning is well nigh perfect. Due credit must be given Iowa's breeders, for Greathill Chief, the five-year-old belonging to Jos. F. Gissible, won second place in the aged class and was awarded champion ribbon as stallion owned in Iowa. Mr. Gissible also won reserve ribbon on stallion owned in Iowa on Mae of Anita. In the three-year-old class Forbes Bros., from Sheridan, Wyo., captured the blue on their Beckton Barrister. He is a horse with good depth of body and excelling those under him in breed type and general development. W. W. Weston & Son, of Audubon, Iowa, are the owners of Sylvan Baron, a horse that has every indication of maturing to be a fine sire. The two-year-old stallion class was one of the largest. McLay's Samuda won the blue, with Gissible's Mae of Anita and A. G. Soderberg's stallion contesting closely for second and third places. Forbes Bros.' yearling stallion won first. He is a strong, masculine horse and carries himself almost princely. A. G. Soderberg had the only stallion foal shown but he was a good one. In the class for stallions over three years bred by exhibitor, the Wyoming exhibitors carried away all the ribbons. In stallions under three years bred by exhibitor, Gissible's Mae of Anita won out over Osco Victor, owned by A. G. Soderberg. The fight for honors in the aged mares, open class, was between McLay Bros. and Forbes Bros. The former won out with Lady de Bath, a very strong and typical mare. She stood four square and every part of her make-up showed all that is desirable in the Clydesdale. Eight fillies were brought out in the three-year-old class. The blue went to the Iowa breeders, Weston & Son, on their Dorothy Vernon. This is a finely finished mare, with a fine feminine head, and is very strong in shoulder and hip. J. F. Gissible, another of Iowa's prosperous breeders, won the red on Flora of Anita. The two-year-old class ribbons were given to McLay Bros. and Forbes Bros. in the order named. In the yearling filly class McLay Bros.' Graceful Lady won the blue. She was by Beauty's Maid, also owned by McLay Bros. Forbes Bros. came third on Beckton Lassie. Soderberg's fine mare foal had no opposition. Dorothy Vernon, property of Weston & Son, was given purple as champion mare owned in Iowa. Flora of Anita was awarded reserve ribbon and is the property of J. F. Gissible, Anita, Iowa. In the get of stallion class there were some fine examples of what selection and mating can do in establishing a certain type. Forbes Bros. won first and second and Wyoming should be proud to have breeders raising such a class of horses. The four colts comprising the winning group showed marked uniformity and they were of the vigorous, drafty type that is called for by the American trade. Forbes Brso. also won first and third on produce of mare. Gissible of Iowa won second with first-class stock which, with more finish, would compare favorably with the best. What little the show lacked in numbers was overbalanced by the general excellent quality, which was conspicuous in all the ribbon winners.

PERCHERONS.

The first class of Percherons shown, that of aged stallions, brought out fifteen massive drafters for the inspection of the judges, John De Lancey, Northwood, Minn., and Robt. Miller, Stouville, Ont. There were no tail enders in the entire horse show—they do not come to the Iowa State Fair. Selecting the "short leet" lowered the number to ten. The Percheron show was a hard-fought battle and if any of the ribbons went to the wrong parties it was not because the judges were not careful and painstaking in their work. The contest for the blue in the aged stallion class was between three very typical blacks. At the finish

Crouch & Son's Acrobat stood first. He is a massive, heavy-quartered stallion with an abundance of snap and vigor and he moved with wonderful freedom for a ton horse. Maasdam & Wheeler's Gillot stood second, a deep-bodied, neatly-turned horse, with good scale and a very typey head. M. J. Nelson's Guy Lusac was nearer in breeding condition and has every characteristic of a great and impressive sire. The fourth horse, Lamy, was more of a chunk than those standing above him, and it was largely a question of type in deciding his standing. Although lacking a trifle in scale he was muscled splendidly and was a drafter through and through. In the three-year-old class Robt. Burgess & Son's Hieroglyphe stood first. He is a horse that has in his makeup the rare combination of scale, weight and quality. He is heavily muscled and very masculine. Seventeen head stood below him in this class, but every horse was a crelit to the show. Peter Hopley & Son are the owners of the second prize winner in this class. He was picked by many of the spectators as the winner. He is a black of very good type and was in very high condition and moved with a trifle less freedom than the horse above him. He is a horse of wonderful depth, width and quarters. It was in third place in this class that McMillan & Sons began to get busy with stuff of their own breeding. Their Vonmore is a typey horse with abundance of scale. He won first later for Messrs. McMillan as stallion bred by exhibitor. The two-year-old stallion cass brought out twenty-eight head which comprised the class which Supt. C. F. Curtiss said was "the best ever in the ring." Crouch landed first money again. This time

CHAMPION AMERICAN BRED PERCHERON STALLION
Iowa State Fair and Exhibition, 1910

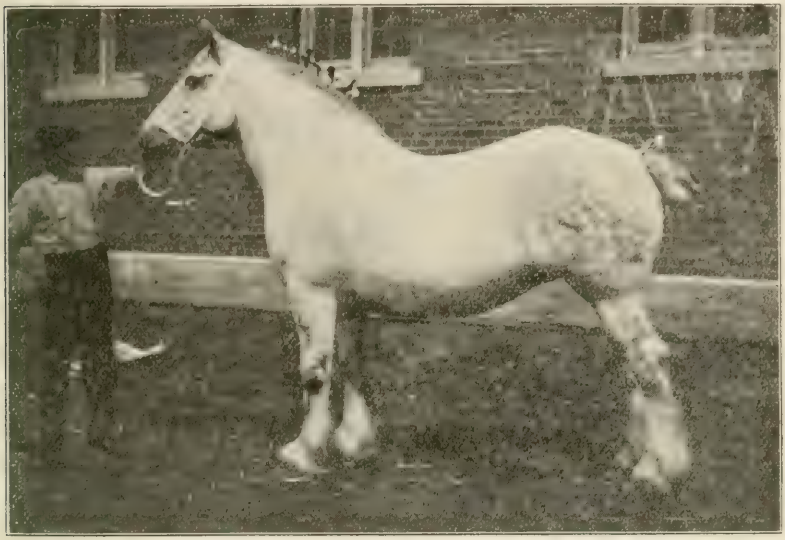
on Isouciant. In the younger classes the ribbons were justly won by Iowa exhibitors. Iowa has fine Percherons and they are at their best at the state fair. The mare classes were strong, but not so many in each class as the stallions. Burgess' Hellen, a gray mare, carried wonderful depth of body and superior type. Crouch's Favorite had hardly the weight, but possessed great femininity and moved strong with lots of snap. Castile, a strawberry roan, the property of E. N. Gates, a winner last year, is a wonderful mare, but a trifle too chunky to please many Percheron fanciers. Seventeen three-year-old fillies were shown. The class was headed by a fine gray filly well developed for age, owned by Crouch. S. Metz & Sons' Harmonieuse was second. She is a fine black, a Percheron from start to finish, with lots of quailty. Four grays headed the twelve two-year-olds shown. Crouch's Indienne surpassed the second winner in muscling of legs and shoulder, also in conformation of hind legs. McMillan's Pinafore headed the string of yearlings. She is an Iowa-bred filly. C. B. Dannen & Sons showed a fine filly foal winning first.

BELGIANS.

With but two exceptions the twelve exhibitors of Belgian horses were from Iowa points. The Iowa breeders were well equipped to make a distinctly high-class display assembled from their own barns; with the assistance of two firms of importers from Indiana and Illinois their success was still further assured. The veteran horseman, Mr. Alexander Galbraith, of DeKalb, Ill., judged the classes in a very careful and systematic manner. He found his most likely candidate for championship honors among the aged stallions. Bonaparte de Boulant, a beautiful and showy chestnut, was his nominee. He is a horse of great quality, a bold goer and altogether a grand good specimen of the breed. When showing for the championship he was somewhat handicapped by a temporary lameness, but nevertheless, easily won the laurels from other very classy entries. Two Iowa stallions, Coquet and Gaillard, reappeared this year after doing duty in their respective studs. Both are of the useful sort and never fail to please even after critical inspection. Fifteen three-year-old stallions lined up to make things interesting for Carol D. Abee. This well-topped horse, however, was able to display the best qualifications for the lead position. The aged mares furnished the champion, Catherina. She is a squarely built bay and a good one. Positions in the stallion and filly foal classes were well contested and as a result some very likely youngsters came to the fore.

SHIRES.

The number of exhibits and exhibitors of Shire horses at the Iowa State Fair increases each year. This growth in numerical strength is regularly accompanied with an improvement in the character of the entries shown. The breed has made a notable increase in popularity in this country. Judges have continuously insisted upon more quality and cleanness of limb; the importers have been bringing over better horses each year and have been finding a readier market for the superior stuff. The display of Shires at Des Moines last week certainly surpassed any seen in the Iowa arena in recent years. Mr. R. B. Ogilvie, of Chicago, selected the winners and in doing so paid close attention to quality and cleanness. Dan Patch, certainly the greatest Shire Stallion upon the American continent, ripens with age. He is just as splendidly masculine and dashy as ever. The drafty bay, Charter-house Cardinal, is a new recruit in the Truman barns, but he gives every promise of ably supporting his stablemate in the ring contests of this season. The aged mares were led by a breedy and shapely bay, Shelford Pride. The Iowa breeders led in a large number of classy and well-grown home-bred stallions and mares which made a most creditable appearance.



CAHMPION SHIRE MARE
Iowa State Fair and Exposition, 1910

DRAFT GELDINGS OR MARES.

As the number of pure-bred and imported stallions increases in the state, naturally the standard of excellence of the grades rises. In the state of Iowa at the present time there are a greater number of high-class draft horses in actual use on the farms than ever before. The state fair plays a very important part in accelerating the interest and enthusiasm in draft horse breeding. A majority of the ribbon winners in this grade class were horses that have been at actual work on their owners' farms during the past summer. Bird, the mare winning the blue in the aged class is one of "the good old-fashioned kind" with massive shoulders and hips. She also possessed plenty of action and was anything but sluggish. Prince, the three-year-old winner, was a drafty, symmetical gelding with plenty of quality. The farmers' teams were a grand string and the appearance of the teams shows that Iowa farmers can groom and harness their teams to perfection. The first-prize team, belonging to E. N. Gates, Newton, Iowa, were strawberry roans, well matched and each of them weighing close to a ton. The other teams were very good and the owner of each team may justly feel proud of his outfit shown in this class. In the open class, Crouch & Son showed five splendid geldings and they took all the ribbons. The draft team in harness commanded the admiration of every spectator. When the ribbons had been placed, Crouch & Son had the blue, Burgess the red and Castile and Strawberry, the Iowa team, the white. J. A. Loughridge, of Delta, Iowa, won fourth with a team excelled by the others only in condition and massiveness. Crouch's four and six-horse teams were the only teams of their kind on exhibition and they were deserving of the prizes which were awarded them.

HACKNEYS.

The aged classes in stallions and mares were well filled and the other classes brought out some very good individuals. Imp. International, a winner last year and the property of Crouch & Son, stood handily at the head of the row of aged stallions. He is a beautiful sorrel, with wonderful dignity of carriage. Tollington, the second prize winner, is the property of Trumans' Pioneer Stud Farm, Bushnell, Ill. He is a fine specimen of the Hackney breed and excelled those below him in height of action, and he also had more style of carriage. Crouch & Son's Imp. Pockington Protector, a fine three-year-old stallion, had no opposition. Chas. E. Bunn carried away the blue and red in the two-year-old class with no outside competition. Cadet, the foal shown by Henry Lefebure, Fairfax, Iowa, had no opposition. A. L. Champlin's first-prize aged mare acted finely and was awarded the blue. Wood Molly, Mr. Lefebure's mare, was placed second in the class of four. Mr. Bunn had the only entries in most of the remaining classes and his horses were awarded the blue in each class. Crouch & Son received the purple and the reserve on their four-year-old and three-year-old stallions, respectively. Alex. Galbraith was the judge.

SHETLANDS.

The Shetland show was one of the best that has ever been held in the west. This is the unanimous verdict of a great number of pony men who have attended the best shows of recent years. The pony show was a show of numbers and of quality. The majority of the class showed on Children's Day and the "kiddies" certainly were interested spectators. The exhibitors say this is a prosperous year in the pony trade and the exhibit would indicate that a large number of men in Iowa and adjoining states are getting to be professionals in breeding and showing the Shetlands. The aged stallion class was shown first. Geo. A. Heyl, of Washington, Ill., won the blue on his spotted stallion, McDougal. Chas. E. Bunn's Grandee showed wonderful style, but was excelled by McDougal in general strength of conformation. Mrs. Adam Sterling, of Des Moines, won first in the three-year-old class on Wagga Wagga, a typey little fellow with lots of quality. The contest for the ribbons was a close one throughout. This was especially true in the class for stallion or mare foal, where thirty-two were shown. John Donhowe, Story City, Iowa, won the blue on a filly pony that certainly was a beauty. She was neat and trim and had all the form of the matured ponies. In the mare classes Messrs. Geo. Heyl and Chas. E. Bunn won most of the blues and reds. In the class for pony in harness, eighteen were shown. Mr. Heyl was awarded first on a fine acting, typey fellow. The second ribbon went to Bunn on Grandee, his three-year-old black stallion. The ponies in harness, four-in-hands and tandems, all were strong classes. The amphitheater was crowded with children and the older ones, who applauded time after time. W. J. Kennedy was the judge.

SWINE.

There were in all 2,044 hogs in the pens of the swine division of the Iowa State Fair this year. That number is less than the exhibit for several years past, but it is yet sufficiently large to permit the show to remain the greatest hog show on earth. The relative numbers of the different breeds remain about the same, with the single exception of the Hampshires, which have made a remarkable increase in numbers, as well as a decided betterment in quality.

A conservative statement with reference to the merits exhibited would be that, while the show was a good one, and doubtless represented the best of the various breeds, the tone was not strong enough to justify a belief in an advancement in those points which go to make for universal improvement. This is supported by the fact, as given in the attendant list of awards, that too many of the principal prizes were captured in bunches by a comparatively limited number of exhibitors. This is no reflection on those herds which won, but rather an indication that too few breeders are workng in real earnest with the purpose of producing and showing animals that closely approach the breed ideals. It would seem that with the passing of those veterans who are responsible for the higher forms as represented by the best specimens of the breeds most popular today, there is a lack of unity of ideals, as well as methods of production. This is evident in the divergence from accepted types of other years. The condition refers especially to the Poland China and Duroc Jersey breeds. Other breeds, remaining in the hands of fewer men, show a trueness to type that is generally remarked upon.

DUROC JERSEYS.

The show of Duroc Jerseys opened up with a very large class of aged boars, and one which possessed on the average a great deal of size. There was perhaps in this lot a greater variation of conformation than existed in any other ring of the show. The judges showed a preference for a hog of medium size in the beginning and consistently followed that course throughout, although they were of course at times compelled to recognize some outstanding points in animals not in line with their ideas. There were really no animals of sensational character in the show of this breed.

A demonstration of the effectiveness of good breeding was made in the winnings of the descendants of the sire, Golden Model. In the various herds they captured twenty or more of the class prizes and all the sow championships. Crimson Wonder and Advance Blood also came to the front in a remarkable degree. The grand champion boar, Freed's Col., traced to the latter on the side of his dam.

It is frequently remarked that the fitting of hogs for show is damaging to their capacity as breeding animals. The truth of the general belief on this question was somewhat shaken this year when Chief's Jewel, the grand champion sow last year, sent forward to this show a bunch of pigs that won third place for her as produce of sow. Half a dozen or more instances along the same line might be pointed out in the winners of this report.

The grand champion boar, Freed's Col., forced his way to the purple ribbon purely on his merits as a hog close to the ideal of the breed. He had not been fitted in such a way as to bring him to his best from a showman's standpoint. In fact, but a short time ago, it was doubtful if he could be gotten into form. But his massiveness of form and smoothness, with excellent breed character, at once attracted attention and held him in the limelight until the final award was made.

Golden Queen 3d, the grand champion sow of the show, was quite a large sow, and one that carried herself so well that at no time was there any serious question as to her fitness for the leading place. She is of a type and style that breeders will do well to cultivate. There could be no questioning her form from the view-point of the breeder. She was a good sow first, last and all the time, and in spite of oeing a show sow.

Some considerable dissention existed among exhibitors as to the decisions of the judges. Hot words passed, and in one instance a resort to force between a judge and an enthusiastic admirer of a particular animal that failed to get to the front was barely averted. The judges were Prof. W. J. Kennedy, Ames, Iowa, and H. H. Kildee, Ames, Iowa.

POLAND CHINAS.

The question of the big hog, the medium hog, or the little hog, was as usual the popular subject of discussion among the Poland China pens. It was to a great extent disposed of in its connection with this show when, in the first class, in answer to an insistent demand of a big hog advocate, Judge Stewart announced that his decisions would be governed by his interpretation of the score card of the National Association of Expert Swine Judges. He contended that this represented the popular and profitable type, and should be the controlling force in the decisions of judges.

There was an apparent one-sidedness to this competition. The Meharry herd made the remarkable record of winning eleven of the sixteen first ribbons put up, and five of the six championships. Only two first prizes were won by Iowa breeders, and these were both on pigs under six months old.

What was perhaps the closest race for first place occurred in the class for sows eighteen months old and under twenty-four. It was a good string of nine, the leaders being Meharry's Violet and Wellington & Spring's Walk Over's Type 3d. It was almost a case of tossing a coin to determine which should wear the blue, and when the judge gave it to Violet there was plenty of evidence that the other might without injustice have received it. The decision was reached through an effort to balance points, rather than on account of any outstanding superiority. Violet was certainly a great sow (she later became grand champion), but in the minds of some a slight imperfection in the manner in which she was ribbed out and some incipient wrinkles on her sides were not overbalanced by a faultiness of hind legs and a tendency toward plainness of head on the other sow. The latter was as smooth as an apple and was in a superbly fitted form.

The grand champion boar, B. L.'s Perfection, was an outstanding winner in the junior yearling class of boars. He had that square, well-balanced build that must attract attention anywhere, and with it carried smoothness and trim finish. It goes without saying that he was in the very bloomiest of bloom and proud as a peacock. He was an Iowa-bred hog and a descendant of both champion sows and boars at the Iowa State Fair. His was a case in which blood tells. On the sire of his dam he is bred much the same as Mr. Chiles' junior champion boar.

Someone who has been a close follower of fairs for many years expressed surprise at the seeming faultiness of feet of practically all the two younger classes of pigs. An endeavor to force a mature or finished condition in a pig cannot end otherwise. J. M. Stewart, Ainsworth, Iowa, acted as judge.

CHESTER WHITES.

The showing of Chester Whites, while a fairly good one, could not have been considered as better than the ordinary. Some fine specimens of the breed were in the rings and a lesser proportion of the inferior stuff than appeared in most other breeds.

Judge Stewart, in his decision on grand championships, crossed the dead line and gave the grand championship boar prize to a pig which was winner in a class under six months. This is a situation which judges dread to have appear before them. In the present case the judge justified his action by stating it as his belief that this pig was the best individual of any breed in the whole exhibition.

In the Chester Whites, as in all other breeds, the phenomenal strength of blood of some strains became prominent. A particular instance was illustrated in the case of get of sire, which was won by the get of the hog, Lewis E. The get of this hog have been winners of this prize at the Iowa State Fair for three years in succession. For the same length of time the winners of first as produce of sow have been by the same hog. Lewis E, himself, has been shown but one year and was a prominent prize taker. Mr. J. M. Stewart judged this breed also.

BERKSHIRES.

The Berkshire show was a good one as Berkshire shows go, but it was not up to the old-time standard of the breed. It was really somewhat disappointing for the reason that, although extraordinarily attractive premiums were offered by the Berkshire association, the number was scarcely greater than in other years, and the quality only a trifle of an improvement.

Without Mr. Corsa and his herd there would have been a hole in the Berkshire department. His exhibit managed to attach an even dozen class ribbons of the sky blue tint, and four championships.

It is something of a misfortune to the breed that Berkshire breeders should permit themselves to become entangled in a difficulty that involves the whole Berkshire interest and prevents a harmonious action in forwarding the welfare of the breed. The situation cropped out at every turn throughout the entire week and under all circumstances. So intense was the feeling that a referee was required to be constantly present in the ring competitions. The judges were N. H. Gentry, Sedalia, Mo., and Wyman Lovejoy, of Roscoe, Ill., with Geo. W. Berry, of Topeka, Kan., as referee.

The grand champion boar, Julia's Duke, is a magnificent specimen of the breed. He shows the strong vitality and vigor of a breeding animal, withal his excellent conformity to show-yard requirements. Julia's Duke is an excellent specimen of what judicious breeding will produce.

Without question the showiest show of the week was the finely fitted young herds that came out in the Berkshire classes. They were like as peas in a pod and of a very high standard of excellence.

HAMPSHIRES.

The Hampshire men made a remarkable increase in the numbers of their exhibit over those of previous fairs. They also held up to a high standard in the merit of their animals. Their exhibit was really entitled to more attention than it received. The show brought out several breeders who had not before made their appearance in the show ring, and the winnings of these newer men were quite creditable. The distribution of championships was more general than in any other breed.

Without indulging in any criticism of the judge, it may be said that it was the consensus of opinion on the part of exhibitors that he failed to observe correct Hampshire type, and made his decisions more largely from a lard hog point of view. This it was said, had a harmful influence among uninformed observers, in that it conveyed an incorrect idea of the type most encouraged by the breeders themselves. Mr. George B. Buck, Sunny Hill, Ill., placed the awards.

YORKSHIRES.

The Yorkshire exhibit was an exceptionally good one. There was no breed on the grounds which showed the same excellent, uniformity of type. Of course, there were but few herds, but those in the main were good ones that presented very toppy form and but little of objectionable character.

The Yorkshire special prize for young herd bred by exhibitor was won by Mr. Davidson with a splendid bunch of youngsters that were not only good, but have promise of still further high development.

The lion's share of the premiums in this breed was taken by the Davidson herd.

Wilson Rowe, Ames, Iowa, placed the ribbons in a quite satisfactory manner.

TAMWORTHS.

The splendid showing of Tamworths indicates that the interest in this breed is growing rapidly and that farmers are appreciating the values of the breed. There has been a constant improvement since their first appearance at the Iowa State Fair. Breeders themselves are highly pleased with the reception their hogs received. Mr. Rowe also judged this breed.

SHEEP.

All of the popular breeds were represented with good exhibitors at the Iowa State Fair. The Shropshires made the strongest showing both in numbers and in quality. Iowa is one of the best sheep states of the middle West and is improving all the time. Her best were at the fair and the Iowa exhibitors won their portion of the ribbons in the Shropshire, Oxford and Merino classes. Competition was the keenest in the Shropshire class. Chandler Bros., Chariton, Iowa, won most of the blues and all of the purples in the open classes. In the classes for Iowa breds, O. H. Peasley, of Indianola, E. L. Bitterman, of Mason City; J. S. Fawcett & Son, of Springdale; J. A. Taylor, of Ames, and McAdoo & Brown, of Indianola, together with Chandler Bros., made an exhibit which was likely superior to any ever seen before on the Iowa Fair Grounds. The special premiums for Iowa-bred sheep are bringing a higher class of stuff each year, and before many years Iowa breeders will be showing sheep of their own breeding which will compare very favorably with those imported at the present time. Nearly every exhibitor had several good rams at the fair and they were readily sold at good prices. Sheep raisers over the state attend the fair from year to year and get correct ideas of the true mutton type and find it profitable to use only the best of rams. Sales on ewes has hardly begun yet, but the talk of the sheepmen at the fair would indicate that many breeders will start this fall with fine sheep and the older breeders will improve with some of the best blood to be obtained. The best Shropshires in America were in the show at Des Moines. W. H. Beattie was the judge.

TWENTIETH CENTURY FARMER.

OMAHA, NEBR.

The Iowa State fair, the greatest agricultural fair and exposition held in the United States, rounded out its fifty-sixth anniversary last week under the most flattering conditions of patronage and successful exploitation of the interests and industries of the state that has ever been brought to the credit of any commonwealth. The Iowa state fair is, in the strictest sense of the term, an agricultural fair and exposition. This is not only strongly emphasized in the kind and character of its exhibits, in all departments, but it is strongly impressed in the great bulk of its patronage. There is a very small per cent of the citified element to be seen on the grounds.

Iowa is a great agricultural state, its interests and industries are mainly along the lines of agricultural production, and these are so closely allied to agriculture and live stock operations that its villages, towns and cities have developed as an adjunct to the farm. Their principal means of existence is through their business relationship in helping supply the aids to farm and agricultural operation. Thus, the towns and townspeople unconsciously become a part of the agricultural production of the state.

EVERYBODY INTERESTED IN AGRICULTURE.

Everybody in Iowa seems to be interested in agriculture—they all talk farm and crops and live stock. Lawyers, doctors, preachers, teachers and professional people generally have farm and live stock ideas and interests, or are allied in some way with agricultural operations. The farm life and farm sentiment seems to be uppermost in the minds of the people. This, to a large extent, may be attributed to the seed that has been sown for many years at the Agricultural college at Ames, under the skillful distribution of such noted agriculturists as Profs. Curtiss, Holden and others of their co-workers, associated with the work at this institution.

The Iowa state fair has been well planned, well managed and is today a credit and honor to the state. It is the greatest public enterprise in the state, measured from an educational and advertising point of view. It is the proof of things accomplished, things acquired. It is the place where all the people go to see the results, and results are what every man in business will tell you count, and they are what he wants. The Iowa state fair is not only an up-to-date institution, but it is always found out on the skirmishing line, it is in the front ranks of improvement, preferring rather to set the pace than to follow.

IOWA HORSE BREEDERS TO THE FRONT.

The horse department at this fair was the admiration and wonder of all who saw it. "Such numbers and such quality" was the exclamation on all sides; 1,125 horses exhibited. Think of this great array of fine exhibition animals, everyone of them fitted and fixed for the show, a prospective prize winner, and you then have some idea of what the visitors of the Iowa state fair were treated to, for days, in the big live stock judging pavilion. Prof. Curtis, superintendent of this department, is authority for saying that there has never been a better horse show in the country. He was especially proud of the display made by Iowa breeders and horse owners. Out of twenty-eight exhibitors of American-bred Percheron horses, numbering 334 head, twenty-four of these exhibitors were Iowa breeders.

Special pains were taken this year in this department to encourage the home breeder of the draft class of horses. This spirit of home enterprise in the breeding of horses meets with a responsive endorsement from the general public. There was one barn on the fair grounds set apart for farmer-bred horses, and it was filled to the limit of its capacity. This stable of horses was a credit to the farmer-bred horse industry. Iowa has taken an advanced step in the horse breeding business, as may be noted in this show, and which is also emphasized in its horse population of last year, 1,447,000 head.

BEEF AND DAIRY CATTLE.

The cattle show exceeded 800, and represented all the standard beef and milk breeds. There was some difference of opinion, of course, among ringside critics as to the quality exceeding that of last year. Those most interested in the show, however, adhere to the belief that each year's results among the breeders indicate a steady advance towards a higher standard of animal type. This is the reasonable and charitable view to take of a work that is so positively progressive and that has such vast creative influences brought to bear for improvement as is found today in the breeding of cattle. This is the beginning of the show season; there is yet great opportunities for improvement between now and the close of the winter shows.

The display of dairy breeds was proof that the great demand for dairy products is being carefully observed by that branch of trade. People are being educated to an appreciation of the fitness of things in production. The once despised cow beast, that could not be turned profitably into beef, is today respected for her specialty work and her adaptability to a special line of industry that has a money-producing power that stands close to the front in its profit-earning capacity. The dairy bred cow, under the pressure of high prices, has demonstrated the wisdom in her creation, and she has established herself under the scriptural decree that everything is made for a purpose, and because she is not a flesh-producer and beef-maker does not argue her unfitness for a special industry for which she was designed by nature to fill.

THE CROWNING HOG EVENT.

The swine display at the Iowa state fair is always looked forward to as the crowning hog event of the fair season. Iowa can boast of more than twice the hog population of any other state in the United States, except Illinois, which has only 530,000 in excess of half the swine population of Iowa. This astonishing excess in numbers of hogs produced in

Iowa, over all other states, does not stop with numbers merely, but shows up in the number of pure bred herds kept. Iowa, at its state fair, makes by far the largest hog show in the world. This year there has been considerable falling off in number exhibited, due to several influences, the main one being the high price and scarcity of hogs at home on the farm, and the scarcity of feed to keep the growing stock up in the best show condition. A shortage in hog supply creates a desire to take particular pains to guard the herd against disease, and this often influences against the breeder taking any chances of showing at the fairs, where he is liable to encounter contamination from herds that are capable of carrying the germs to the show. The same old contest of size, large bone and small bone, is still a feature among breeders that is not settled, and possibly never will be, and, for the best interests of swine breeding, possibly never should be. It is safe to say of swine, as is true in other kinds of live stock, that the tendency is forward—each year is drawing nearer to the prefect hog.

NUMBER OF SHEEP BREEDERS INCREASING.

The sheep department at this fair has been for several years past a steadily developing feature of exhibit. Each year has shown improvement in quality and increase in numbers shown. This year the 700 mark was passed, this being the largest number ever exhibited on the Iowa state fairgrounds. The number of Iowa breeders now exhibiting is the feature of greatest interest and indicates the educational influence that the foreign exhibitor has been exerting all these years of quiet and seeming inattention by the Iowa farmer and sheepman. Iowa has awakened to the importance of the farm flock, and the signs of the times would indicate that for the next few years it will exceed any other state in the union in the establishing of pure bred flocks.

The state fair show this year was one of quality as well as numbers. The Shropshire class was an exceptionally strong one, plenty of competition and at the head of all the classes a contest for honors that caused the judge to scratch his head and prepare for a guess that would in a measure sustain at least reasonable sheep judgment. The judge of the mutton breeds, W. H. Beattie of Wilton Grove, Ontario, acquitted himself quite creditably as a judge and breeder who is up to the times in present day sheep improvement.

The fine wool division was not so fully represented, though quite a good display was made in the Ramboullet class of Merinos. This class had the distinction of being represented by flocks from Ohio, Nebraska and Wyoming, covering both the eastern farm ideas of type and also the range sheep district of the west. Wyoming took the lead, having one of the best displays of this family of Merinos ever shown in the United States. These noted show animals represent the flock of King Bros. of Laramie, Wyo., and for size of sheep and bulk of fleece, with good style and finish, are hard to excel.

The poultry show was fully up to last year in numbers and in quality, the superintendent expressing the opinion that it never had been quite the equal of this year. This department is gaining support from among the farmer poultry raisers; the show is assuming more of a local interest. Iowa is in the list of big poultry producing states and this industry is increasing rapidly.

NOVELTY IN BIRD EXHIBIT.

One of the novelties in bird exhibit, and one seldom witnessed on state fair or exposition grounds, was made by the state game warden of Iowa, George A. Lincoln. This consisted of 3,000 pheasants recently purchased by the state of Iowa from Wallace Evans of Oak Park, Ill., the great pheasant specialist, who, besides raising 8,000 pheasants per year on this 300-acre pheasant farm, imports large numbers of these birds from foreign countries, mainly of the Chinese variety. Mr. Evans keeps forty odd varieties of pheasants. The English and Chinese varieties are his specialities in breeding, as they adapt themselves to outdoor wild life equal to the old-fashioned wood pheasant of America, and are very hardy and prolific when turned loose to take up their abode in the timber lands.

This exhibit of wild birds occupied about one-half acre of the hillside facing the live stock pavilion on the fair grounds. The lot was enclosed with chicken wire to a height of about ten feet, and was supplied with running water, gushing out of artificial fountains and running off down the hill over rocks and gravel, just like any spring water in the wooded hill lands of the mountain or hill districts of our own eastern states. In this great aggregation were a dozen or more kinds of water fowl of foreign origin, added to give variety to the picture. These pheasants were all young of the 1910 hatch and had been raised by common barn-yard hens, and consequently quiet tame, no more disconcerted by the thousands of curious spectators peering through the wire screen than if nothing was going on around. They seemed to be on the tramp however, going here and there, looking for any kind of insect nature that had chanced to make its appearance. They proved that they were insect-destroyers and experts in getting anything they went for; even the common house fly had no business within their inclosure.

The purpose of the game warden is to distribute these birds throughout the state, by counties, and give one or two pairs, not more, to each responsible farmer who agrees to give them the required attention and grow them to be turned loose on his farm. These birds sell at private sale for $6.00 per pair, but the wholesale deal to the game warden is supposed to have been at a greatly reduced rate. To say that this was one of the leading attractions on the grounds is putting it mildly, judging from the large crowds they attracted to their enclosure.

AGRICULTURAL HALL.

The agricultural hall, a large and costly brick structure conveniently located for the crowds that attend the fair, is always a most interesting place for the curious, the scientific, the sightseeing visitor of any taste or inclination. Here is housed the agricultural products exhibits, the horticultural and floral displays, the bees and honey, the seed corn judging and agricultural college exhibits; the creamery supply features, dairy products and creamery machinery, etc. A large division was occupied by the cream separator representatives and the various separators, etc., that they handle. Special exhibits of an agricultural character are given space in this building—land advertising exhibits, both foreign and those representing states within our own county. Frank Odell, the bee wizard of Nebraska, was located in this building, the man who goes into a cage with a swarm of otherwise infuriated bees, tames them down to the most innocent, harmless pets, that crawl around over his face, bare arms and hands in the most docile and affectionate manner, while this great bee tamer talks to hundreds of curious people who crowd around to hear what he has to say and see his reckless performance, even more daring than Daniel in the lion's den.

MAP IN GRAIN AND SEEDS.

A very artistic piece of work, and quite educational in its detail and purpose, was a map of the United States made of grains and seeds, representing the corn belt of our country and presenting the compiled agricultural statistics of Iowa in farm products, live stock, etc. This map occupied a wall space of possibly 20x80 feet. Its effect of shading to show the corn belt was quite accurate and impressive, placing the big corn-producing states in the center and shading from a very dark red to a lighter color from this as it approached the less productive districts. Iowa's 1,447,000 horses, 6,485,000 hogs, 5,181,000 cattle, 754,000 sheep, 47,000 mules and 22,062,000 poultry were an eye-opener to the Iowa farmer even. This piece of art was designed and prepared by Fred Hethershaw, a prominent young farmer near Des Moines, who has for several years been a leader in exhibiting Iowa products at the large fairs and expositions of the country.

The display of farm products, while much larger than has heretofore been made at this fair, was not of the kind, character, artistic arrangement and magnitude that a great agricultural state like Iowa should feel satisfied in putting before the public. The horticultural display was very weak, due largely to the lack of material to make a show. The work of the frost and freezing of last April and May left practically nothing on the hands of Iowa fruit growers to select from. This is not only true of Iowa, but is shared in by most other states in the same latitude.

EIGHTY-FIVE ACRES OF MACHINERY.

The machinery department of the Iowa state fair is a show by itself. In other words, it is so large and covers so much space that only the interested who can take time to travel about among these exhibits can form much idea of its immensity. It is said to occupy eighty-five acres of ground and every foot of available space was taken. There were forty traction engines exhibited this year. In this department there were 100 more exhibitors than last year and 700 more people to take care of as assistants and helpers. "The machinery display of this year was the largest, cleanest exhibit we ever had on our fair grounds," was the expression of Superintendent Ledgerwood. There were more than a dozen states represented in their contributions to this great collection.

THE GRAND ARMY ENCAMPMENT.

The old soldiers of the war of the Rebellion, in their annual reunion on the Iowa State Fair Grounds, introduces one of the most interesting exhibitions of organized human sympathy and brotherly love to be found in the association of men in this or any other age. The mingling of joy and sadness at the coming of an old comrade or the announcement of his having passed beyond the line of conflict were the emotional expressions to be witnessed on every hand in this large congregation of the old boys in blue. The quick step, the erect figure that the sound of the fife and drum instills temporarily into the movements of these gray-haired veterans is little less than the influence of supernatural power. Tuesday of the week of the fair was old soldiers' day, and the Grand Army button was the ticket of admission. These old guardians of liberty were made the honored guests of the State of Iowa.

LARGE EXHIBIT OF CATTLE.

All departments in the cattle division showed a nice improvement over last year and most of the breeds made stronger showing, although one or two seemed to be hardly up to the 1909 assembly. Stock were uniformly well fitted and the English Shorthorn judge pronounced himself well pleased with the cattle after having seen them all. Herds from every state in the corn belt were on exhibition, although Iowa made the strongest exhibit and captured fully half of the prizes. Over 800 head were entered, which shows quite an increase over last year. The winners in all breeds will be watched as they follow the circuit and a great deal of interest will be attached to the final meeting place at the International, where all come together again for a last rub.

GREAT SHORTHORN SHOW.

Always a feature of the stock show at Des Moines, this great breed added new notches to the totem pole this year, the grand array of breeding shorthorns calling forth extravagant praise from no less an authority than the celebrated English breeder, J. Deane Willis, who pronounced the show a wonder, and unexcelled anywhere in the world. Mr. Willis is one of the best known English breeders of shorthorns, and as judge of of shorthorns at the 1910 Iowa state fair, gave splendid satisfaction, and earned enthusiastic commendation from the many exhibiting breeders.

While the number exhibited has been equalled at former fairs, the quality was probably more uniformly good than at any time in recent years, and many times a hairbreadth might be said to have represented the difference in merit between contending entries.

In the aged bull class the ever-wakeful Frank Harding sprung a surprise in the imported white bull, White Star, an outstanding winner in class and later made grand champion bull of the breed. Only imported about ten days previous to the Iowa fair, and lacking somewhat in flesh necessary to best show conditions, this grand bull made a wonderfully impressive show. Beautifully fronted, with a width and evenness of back probably never excelled at this fair, he boasts a thickness of flesh and a symmetry of outline that make him outstanding winner of grand championship.

In the two-year-old bull class, The Captain, owned by Carpenter & Ross, was returned a rather easy winner, while the senior yearling class developed nothing inclining toward the sensational.

In the junior yearling bull class a close fight developed between Harding's entry, Fond Memory, by Whitehall Sultan, and Saunder's True Cumberland, by Cumberland's Last, two outstanding young bulls. The wonderfully good front and heart girth of Fond Memory doubtless influenced the judge's decision that first belonged on this bull.

In the senior bull calf class, Graham's twin bulls were returned, respectively, first and fourth. Harding captured both first and second on junior bull calves, though the Powell calf, King Cumberland, second, full brother to the sensational King Cumberland, was a close contender, and promises well for the future.

THE COW CLASSES.

Between female entries competition ran fully as keen, and especially in the younger classes were quality and merit uniformly characteristic. In aged cows first honors went to the beautiful white daughter of Ceremonious Archer, Sinnissipi Rose, second, a smooth type cow, with a really wondreful top and rib covering.

Many differed with the judge, however, on the placing of the next two candidates, the excellent forerib covering of the George White cow, combined with her feminine breedy front, making her general favorite over the judge's selection, the Tietjien cow, Imp. B. C. Maid. However, Tietjien had things all his way in the succeeding class for two-year-old heifers, winning first and subsequent grand championship on the beautiful Miss Marshal II. Tomson & Sons brought out an outstanding heifer in the junior calf class one of the finest youngsters seen in a long while, and a daughter of Brampton Knight. Indeed the display of young heifers was easily a feature of the show, the great array of Cumberland Last heifers winning first, third and fourth in the junior calf class and afterwards standing in first prize breeders young herd, headed by a son of the same sire. From every standpoint the Shorthorn show was good and breeders of the world popular red, white and roans may again congratulate themselves upon having attained another step forward.

STRONG WHITE FACE SHOW.

The white-faced aggregation loomed up remarkably strong and even gave promise of equaling the Kansas City show, which has always held the name of being the greatest Hereford display in the world. Prof. Kinzer of the Kansas Agricultural college placed the awards. Classes were very large, and with the entries uniformly good the judge had difficulty in lining them up to suit himself. However, in most cases the awards looked logical to the onlookers. Most of the winners in the older classes were animals which stood well up last year at the big shows, although several new gems were discovered which were heretofore unknown to the public. Van Natta's Prime Lad 9th, winner of first in aged class, was defeated for senior championship by Harris' two-year-old Repeater, a bull who won many high class laurels during the last season. McCray was awarded the grand champion female ribbon upon Lady Fairfax 4th, a cow of excellent width and depth and very well covered over the entire body.

ABERDEEN-ANGUS WINNINGS.

Aberdeen-Angus showed somewhat better than last year. A total of 100 head were exhibited. M. E. Bradfute of Ohio made the awards. Winnings were pretty well divided between the four large breeders and practically all the winners were from Iowa herds. Battles' aged bull Oakville Quiet Lad was awarded senior honors over McHenry's two-year-old Quality Prince, an animal which was outstanding winner as a yearling. Criticism ran high when this decision was made, but the aged bull seemed to be a little deeper bodied and more compact, and in general more of the judge's type. McHenry secured junior honors on Protine and Battles was awarded the grand ribbon on the senior bull. McHenry's old winner, Barbara McHenry 24th, was deservedly made grand champion female.

GALLOWAYS NOT NUMEROUS.

Galloways were not very numerous, but showed in good shape. Winnings were pretty equally divided between Straub of Nebraska, Hechtner of Iowa, and Bayles of Iowa.

POLLED DURHAMS.

Four excellent herds of Polled Durhams were exhibited and comment seemed to have it that the showing eclipsed that of former years. Tom Flynn of Des Moines officiated. Walker Brothers of Ord, Neb., showed a nice string and took home a goodly share of the ribbons. Miller's from Indiana had a little better fitted herd, and in several instances this alone seemed to be the cause of their going first.

HORSE EXHIBIT VERY GOOD.

The display of both light and draft horses, was far ahead of any previous showing not only in numbers but in quality as well. All breeds made a splendid showing and a great deal of interest followed judging throughout. The entire arena in the large pavilion was used each forenoon for the horse judging, and the numbers were so great that all was not completed until Friday noon. Naturally the draft breeds were best represented not only by imported animals, but by a large number of home breeds as well. The latter showed up unusually strong and many ribbons were captured by them in the strongest kind of company from across the water. The total number of horses entered exceeded 2,000 head and this placed it as a horse show on a footing almost the equal of that at the International. The light horse show was by no means lacking and many compliments were paid to it by prominent onlookers. Each evening the various breeds of horses were paraded in the pavilion before a crowded house and attractiveness of the displays held the attention.

PERCHERONS AT THE FRONT.

Percherons stood foremost as a breed in point of numbers. John Delancey of Minneapolis and Robert Miller of Ontario, placed the ribbons and gave quite universal satisfaction. The classes were very large and considerable time was required to pick the winners from each one with the result that four days were necessary to complete the awarding. Crouch won first in aged stallions with a horse which was scarcely the equal of Carnot, last year's winner. In the three-year-olds Burgess stood at the top with Hierglyphe, a stallion in the pink of condition, and outstanding in his class. Crouch secured first in the two-year-olds, with a very promising colt newly off the boat. Burgess deservedly caught the championship on the three-year-old.

In mare classes the judges found several very light places to squeeze through. American breds were very numerous among these and caught quite a few ribbons. The awards in the aged class aroused considerable comment and many would have reversed the first two if they had been doing the judging. As it was, Burgess took first upon a very large grey mare with a very deep massive body, but showing a bit plain at the hips and in her hind legs. Crouch caught the red upon a somewhat smaller mare, but one showing more Percheron type than Burgess' and somewhat better on her legs. Crouch secured first in the three-year-olds and two-year-olds with two extremely typey mares, but both a bit smaller than some would like. In the two-year-old class the judges disagreed on the second and third places and Alexander Galbraith was called in to settle the dispute. He cast his ballot for the Burgess mare which was a filly of unusual size and action, although scarcely as feminine and as clean cut as the McMillan mare, which was placed before her. Crouch's three-year-old won the championship and from the ringside appeared to be worthy of the honor.

ENGLISH SHIRES.

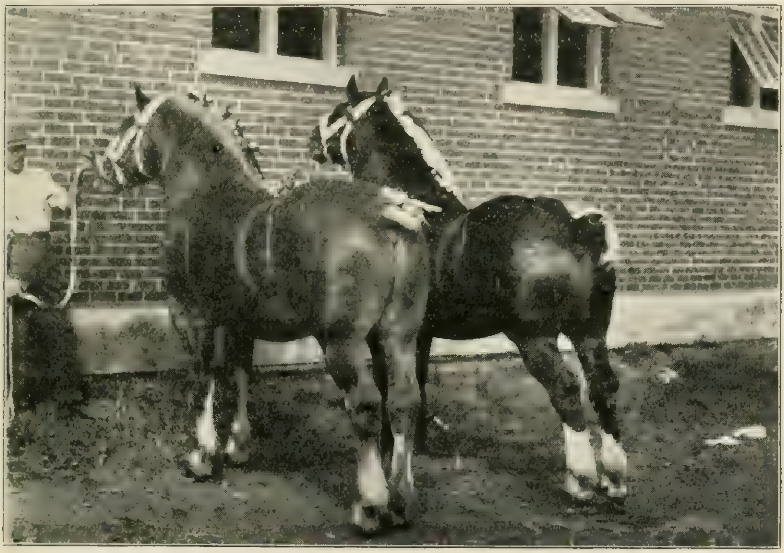
English Shires were judged by R. B. Ogilvie of Chicago and formed a strong section of the horse show. Truman secured both championships, although other exhibitors succeeded in catching a good share of the minor prizes. Dan Patch, the champion stallion of 1908 and 1909, was winner of the purple. His size and substance place him above all competitors and leave him as outstanding winner. In point of numbers this breed made a much stronger showing than last year and many choice individuals were included in the collection.

CLYDESDALES FROM WEST.

Clydesdales were present in about their usual number and form, although one group from the west swelled some of the classes considerable. Prof. W. J. Kennedy did the awarding. McLay Bros. of Wisconsin secured both championships and quite a few other prizes. Their winners were principally Wisconsin bred. Forbes Bros. from Wyoming made their initial appearance with western raised Clydes and secured numerous winnings, including reserve championship on stallion. The exhibit as a whole displayed the good quality and feet of the Clydes, although some were a bit small and the fetters on many was lighter than that which is typical of the breed at home.

BELGIANS SHOW QUALITY.

The showing made by the Belgian breed was good from the standpoint of quality, but scarcely as large as of other breeds. Alexander Galbraith judged these and after completing his task stated that he ws quite pleased with the uniformly good individuals shown. Crouch won both championships and a good share of the other ribbons in the breeding classes, while in the gelding show his big six-horse team shown separately and together were outstanding winners.



FIRST PRIZE BELGIAN STALLIONS
Iowa State Fair and Exposition, 1910

Light horses showed up unusually well, and although the coach classes were small, one could see as good a string of drivers and saddlers as would be found at any of the large eastern shows. Tom Bass of Missouri exhibited one stable full of saddlers and drivers which performed in the ring to a degree almost human in nature. Several large eastern stables were represented by strong showings, especially in the roadster classes. Shetland ponies showed up well, particularly in point of numbers and the children in the grandstands displayed keen interest in watching the little fellows being driven about in the ring and later placed for ribbons.

FAT STEERS.

Fat steers were placed Thursday by the breed judges. Shorthorns were most numerous and several probable international winners were among the list. Angus steers looked well and quality and condition placed them in a class by themselves. Most of the Herefords were rather soft, although several extra good bullocks were on hand. The class for grand champion steer created a good deal of excitement and the three judges each wished their own breed champion to be placed at the top. After a half-hour's parleying the English judge withdrew his ballot from the two-year-old Shorthorn and then the three worked upon the Brock Hereford and Miller Angus yearlings for an equal length of time and finally decided for the Hereford. This steer showed a beautiful form, straight top and fine flank, but was a bit soft and not very thickly covered over the loin. Many thought the Angus worthy of the ribbon because of his much firmer flesh.

DAIRY STOCK.

A fairly large display of dairy stock was made by various breeders from over the country. Jerseys were represented by the largest group and many former winners were upon the lists. The champion bull represented the fine island type to an extreme degree. He is a black weighing scarcely over 1,200 pounds and does not carry an ounce of surplus flesh. The cows were mostly home-bred and were all built for work at the pail. Guernseys were exhibited by several of the largest breeders in America. Marsh of Waterloo showed his four-year-old heifer Dairymaid of Pinehurst and won championship upon her. This is an instance of show yard and cow yard types agreeing, as this cow has just completed a world's record of over 1,000 pounds of butter in a year as a three-year-old. Holsteins did not form a very large exhibit, only two herds being shown. Quality was very good nevertheless. White of Iowa took both championships, the female on a nine-year-old heavy producing typy cow and the male upon a two-year-old calf of this same cow.

THE SWINE SHOW.

While the number of hogs entered fell below the total of previous years, many factors combined to make the 1910 show one of the most generally satisfactory exhibitions of the decade it ends. Among contributing causes we might suggest the uniform excellence of exhibits and practical absence of "tail enders;" the extremely good demand for hogs, at liberal prices, and, in the main, satisfactory judging and awarding of ribbons. Indeed, demand for hogs was best in several years, many being sold out of both show and sale stuff before the fourth day. Exhibitors were highly encouraged, and it is safe to state that the 1910 fair did much to give breeders that feeling of confidence in their profession, which many were beginning to need most seriously.

DUROC-JERSEYS.

It is coming to be quite common that the Duroc-Jersey show at Des Moines shall furnish a surprise to even the most ardent admirers of the breed. While the number shown this year fell far below the vast array of 1908-1909, the surprise was furnished by the wonderful, uniform excellence of animals shown, even the fanciers of other breeds, conceding this to be a plainly apparent fact. A careful study of awards serves to show that several of last year's winners were, unlike Mr. Jeffries, able to "come back" in rare good form, though some of the best things in the show stepped into a ring for the first time. Profs. Kennedy and Kildee are to be commended for the excellent satisfaction afforded breeders by their work.

Baxter & Comer were heavy winners, taking first in the aged boar class on Crimson Wonder 3d, and fifth in same class on McNeal's Wonder; fourth in junior yearling, on Kornel of Kornel; third in junior boar class on C. & B.'s Colonel 2. They won second on Lady Coral, as junior yearling sow, but only fourth on Clara II as senior yearling. They also won first on produce of sow, young herd, young herd bred by exhibitor, and aged herd. Their Crimson's Model took the junior sow championship.

Waltmeyer Bros. were successful exhibitors, taking first place by Golden Queen III as aged sow, and the grand championship; first by Model Lady, senior yearling; first by Golden Queen VI as junior yearling sow, fourth in senior sow pig class and second in junior sow pig; first in aged herd bred by exhibitor; second in aged herd. Their Golden Queen III took senior sow championship.

The junior champion boar was Colonel Tippy, owned by Ira Jackson. Mr. Jackson's Tippy Orion won first as senior yearling boar, and Colonel Tippy took first as senior boar pig. He secured second on produce of sow and second on aged herd bred by exhibitor.

Second place in the aged sow class was taken by Harding's Model II, owned by R. J. Harding; Stuart & Sons, second in aged boar class on Chief's Sensation, jr., second in senior yearling boar class on Golden Model, jr., second in junior yearling boar, by Nora's Wonder, owned by Gawley & Southall; second, senior boar pig, Steward & Son, by Duroc Chief; second junior boar pig, by Balmat & Son; second senior yearling sow, H. S. Allen by Lady Wonder VIII.

Senior champion boar was given Freed's Colonel, owned by Harding & Freed.

POLAND-CHINAS.

The Poland-China classes were well filled with representatives of the medium type hog, and as usual the judge inclined toward placing the ribbons on "Hot-Blood" stuff. Big type Poland breeders, such as make the swine show at Lincoln, had little part in the 1910 Iowa show, though such breeders as exhibited big type animals had the best sales on the grounds. It is to be hoped that the near future will witness a breaking away from the old guard, who dominate judging of Polands at Des Moines, to the extent that the great army of breeders, who now breed big type, useful Polands in Iowa may receive some show ring recognition of the vast service they have done the breed. The signs are good that a shake-up is emminent—may the fates be kind.

J. E. Meharry had a very successful Poland-China herd, winning first in the following classes: Aged boar on Chief Impudence; senior yearling boar, on Illuminator; junior yearling boar, on B. L.'s Perfection; senior boar pig, on Bouregard; aged sow, on Perfect Dewdrop 2d; senior yearling sow, on Violet; senior sow pig, on Cinderella; aged herd; get of sire, on Erector; young herd; young herd bred by exhibitor. Mr. Meharry won second and third places in several classes and took five championships, as follows: Senior champion boar, on B. L.'s Perfection; junior champion sow; senior champion sow; grand champion boar on B. L.'s Perfection; grand champion sow on Violet.

Another first prize winner in the Poland-China classes was S. P. Chiles, who got first on junior boar pig; third on S. P. Perfection in junior yearling boar class; second on Satin Finish in senior sow pig classes; third in the junior sow pig class; third on produce of sow. Mr. Chiles secured the junior boar championship, the only Poland-China championship not secured by Mr. Meharry.

Wellington & Springs secured first place in junior yearling sow class on Miss Keep Ahead; first on aged herd bred by exhibitor; second on get of sire by Master Walkover; first on produce of sow, also fifth in same class; third in young herd bred by exhibitor.

Other exhibitors who won second or third places in the various classifications were J. E. Francis & Son, second aged boar, by Royalty; second, junior boar pig; second, aged sow, on Margaret 6th; second, junior yearling sow, on Sweet Dream; second, aged herd bred by exhibitor; second, aged herd; third, get of sire, on Meddler Keepon; second, produce of sow; second, young herd; second, young herd bred by exhibitor. O. Whiteman, second senior yearling boar, by Reflector 2d, J. V. Garvey, second, junior yearling boar, by Ringmaster; second, senior boar pig, by Walkover Boy.

In the Berkshire classes W. S. Corsa carried off most of the first prizes, taking first in senior yearling boar, on Keystone Duke; senior boar pig, on Superbus; junior boar pig; aged sow, on Mistress Piece; junior yearling sow, on Mistress Piece II; senior sow pig on Rival's Princess III; produce of sow; get of sire; young herd; young herd bred by exhibitor; aged herd and aged herd bred by exhibitor. Second, senior yarling sow, on Masterpiece, second, junior sow pig. Of the championships, Mr. Corsa took junior champion boar, by Superbus, junior champion sow on Rival's Prince II; senior champion sow, on Mistress Piece; grand champion sow, on Mistress Piece.

Farmer's farm got first, aged boar, on Julius Duke, and senior and grand championships on the same animal.

Rookwood farm got first in senior yearling sow class on Lady Premier 101, and second, junior yearling boar, on Rival's Champion Best.

Riley & Son took first, senior yearling boar; and first in junior sow pig class, on Star's Empress 4th, and second place in the following classifications: Aged boar, on Herman's Whiff; senior boar pig on Wild Rose Nee Beauty; junior boar pig, on Valuable Star; aged sow; senior yearling sow, on Sweet Marit R.; senior sow pig, on Golden Glory; produce of sow; get of sire; young herd; young herd bred by exhibitor; aged herd.

CHESTER WHITES.

Bulk of more desirable prizes in this class went to Nagle & Son of Iowa, and D. H. Lewis of Illinois, the breed affording one of the best shows made in years. James Stewart of West Liberty, Iowa, was judge, to apparent satisfaction of exhibitors.

FARMERS' TRIBUNE.

SIOUX CITY, IOWA.

Iowa has reason to be very proud of her annual fair and exposition. It is a great institution. It is one which not merely amuses, but instructs. It is a gigantic 10-day educational institution organized to aid in keeping farmers and stockmen in touch with each other's work, as well as to aid people of the cities to learn something about the country and its products. In this it is succeeding beyond the fondest expectations of its most enthusiastic admirers. For the man engaged in farming it is unquestionably the most valuable institution in the state for stimulating interest in his work and spurring him on to better things. It is to be regretted that the attendance from the country is not several times as large as it usually is. Thousands of farmers are annually missing much because they will not take a few days off to study the improvements that are being so rapidly made in the agricultural field. While the management is not complaining about a small attendance, yet we cannot help but feel that a comparatively small percentage of farmers attend the magnificent state fairs that are annually being held all over the country.

The attendance at the fair this year was over 220,000, or nearly 25,000 larger than last year. Money receipts from all sources exceeded those of last year by close to $15,000. This speaks well for growth. One should not complain at this; nevertheless, more Iowa farmers could to their own advantage, attend this fair and exposition more liberally. It is impossible to convey a satisfactory impression of this great educational institution in a short article, if indeed it could be done in a whole book. To be appreciated the fair must be seen—not in a superficial manner, but in a careful way. It must be studied. A whole week can easily be spent in study. Exhibitors are always glad to answer questions about their exhibits and make detailed explanations concerning everything under their charge.

When one sees the magnificent show of pure-bred live stock at this great fair—the horses, cattle, sheep, and swine—it is almost impossible to realize that there are more farms in Iowa where live stock is neglected than there are well stocked farms, the fertility of which is maintained through the aid of barnyard manure and intelligent crop rotation; yet such is the case. Iowa is a great live stock state, and her fair bears witness to that fact; yet were her supply of cattle doubled, her farmers would be still more prosperous and the time for the purchasing of commercial fertilizers would be still farther removed. Judging from the showing which the breeders of live stock made, there never was a time when there was so much good pure-bred stock in the country as there is today. Incidentally let us say that there has not been a time in recent years when the outlook for the breeder of first class stock was brighter. We are on the eve of a great cattle shortage and the wise farmer who is in position to secure a foundation for a good herd of cattle should take advantage of present relatively low prices.

The horse show was magnificent. From a quality standpoint it was the finest that has ever been held before in this country, and from a standpoint of size it was no less imposing. As usual, the Percheron breed far outnumbered the other breeds of draft horses. The Percheron show was also very strong in quality and weight. Ton horses were much in evidence. The classes were unusually large and imported stallions were plentiful. Importers had evidently done their best in gathering the cream of the Percheron crop from across the water—each with a determination of winning the best prizes. In spite of this strong showing, home breeders did remarkably well. They held their own, showing that we can raise as good horses in this country as they can in France. The time is here when it is no longer necessary to cross the ocean to get the best the Percheron breed affords. This, of course, is not news, but the prizes that were won by several home-bred stallions against the best sires France affords, emphasized this point in a marked degree this year. This is a fact that farmers should allow to become deeply impressed upon their minds. This year's show records emphasized what we have so often said that there is no country in the world that is better adapted for the production of draft horses than certain sections of the United States. American-bred mares have for years successfully competed against imported individuals, but American-bred stallions have perhaps never done better in the show ring than they did at Des Moines this year.

The Belgian, Shire, and Clyde shows were also very strong and breeders and importers had ample reason for pointing with pride to their exhibits. The Belgian classes especially were very large and the competition for honors keen. Several of the stallion classes were so well filled that many very excellent individuals could not get within the money. Some of those close to the foot of the rings were as good as the best in former years. To occupy the lowest place within the money in the Belgian classes was a mark of great distinction.

In the cattle division the Shorthorns made the strongest showing ever. The rings were crowded to the utmost. J. Deane Willis of England, one of the leading stockmen and cattle judges of Europe, who judged the Shorthorns, remarked concerning the cattle show: "It is the finest in the world." Since the Shorthorns, as usual, outnumbered the other beef breeds they naturally came in for a great deal of credit in the above estimate of Mr. Willis. As a nation we are rapidly coming to the forefront in the breeding world and we predict that it will not be long before the American breeder will take first rank as an improver of live stock.

The Hereford breeders made a fine showing with their beautiful "White Faces." Both in numbers and quality the Hereford show was a great deal stronger than it has been in recent years. It is a matter of considerable interest to those who, other things being equal, prefer a polled to a horned animal that two double standard polled Hereford bulls came well within the money, especially considering the very strong competition they had to meet. Polled Ito, a yearling polled bull, won sixth in the open class and first in the Iowa class, while Eckle Grove, a two-year-old polled bull—weight 2,080 pounds—won fourth in the open class and first in the Iowa class. Considering the recent origin of this breed this showing must certainly be very gratifying to its promoters.

The Angus show, from a standpoint of quality, was superb and better than last year, but from a numerical point of view it was not quite on a par with some previous shows. The uniformity of the Angus rings was freely commented upon by the onlookers. "They all look alike," was a common expression. "How can the judge pick the winners from cattle that look so nearly alike?" And such expressions were not to be wondered at. "Doddy" breeders are certainly to be commended for their adherence to a definite type.

The Galloway show was not large, but the few herds present were very fine and much admired by the visitors to whom the shaggy blacks in this section of the country are comparative strangers.

The dairy breeds were comparatively well represented. The four breeds—Holstein, Jersey, Guernsey, and Ayrshire—were represented, some better than others. Much interest was manifested by the farmers in these cattle, which is but natural with the present good prices of dairy products. The dairymen also held a well attended meeting on the fair grounds and an excellent program was rendered. A number of lectures on dairy topics were delivered, and plans were made for securing the passage of certain laws with reference to regulations pertaining to sanitary milk and tuberculosis, at the next session of the legislature.

The agricultural and horticultural displays were far from what one would like to see at a state fair. Having been a very poor fruit year, one could not, of course, expect much in the horticultural line, at least not in the way of fruit exhibits. Corn not being ripe at the time the Iowa State Fair opens, new corn is an impossibility, at the same time there is no reason why an attractive agricultural display should not be made. In the live stock departments the Iowa State Fair is clearly a leader among all the fairs, but this cannot be said of the agricultural and horticultural departments. It is time for the management to pay a little more attention to these departments, and to make them what they should be, and easily can be made. The fair has always been behind in these departments, and instead of improving they seem actually to be deteriorating. The improvement of our crops and the management of our soils are as important subjects of study as the improvement of our live stock. It is to be hoped that something will be done in this direction for next year's exposition. Let us not have a one-sided fair, but one that is a leader in every respect.

The machinery show was, as usual, very large and very instructive. The various lines of farm machinery were well represented and some new things were to be seen. What is termed a "pollenizer" for clover is a new invention. It is a large brush that is hauled over a clover field when nearly in full bloom in such a manner that the bristles of the brush are supposed to open the clover flowers and pollenize them. It is said that if a field of clover is gone over twice with this pollenizer that the harvest of double the amount of seed ordinarily received is a practical certainty. Whether the machine will do what the inventors claim for it we are unable to say. The display of cement machinery and of the various uses to which cement can be put was very interesting. Several kinds of moulds for making cement building blocks and fence posts were prominently displayed.

AWARDS

IN

LIVE STOCK DEPARTMENTS

IOWA STATE FAIR AND EXPOSITION
1910

HORSE DEPARTMENT.

SUPERINTENDENT ....C. F. CURTISS

PERCHERON.

EXHIBITORS.

Robt. Burgess & Son, Wenona, Ill.; J. Crouch & Son, LaFayette, Ind.; S. P. Christiansen, Story City, Iowa; Crawford & Griffin, Newton, Iowa; Wm. Crownover, Hudson, Iowa; C. B. Dannen & Sons, Melbourne, Iowa; Finch Bros., Joliet and Verona, Ill.; Loren Dunbar, Earlham, Iowa; E. N. Gates, Newton, Iowa; J. M. Gross, Waukee, Iowa; R. A. Hart, Danbury, Iowa; Peter Hopley & Son, Lewis, Iowa; Chas. Irvine, Ankeny, Iowa; H. M. McCoy, Altoona, Iowa; H. G. McMillan & Sons, Rock Rapids, Iowa; C. D. McPherson, Fairfield, Iowa; Maasdam & Wheeler, Fairfield, Iowa; S. Metz & Son, Homewood, Ill.; John Moran, Nevada, Iowa; Wm. Mason, Carlisle, Iowa; M. J. Nelson, Cambridge, Iowa; F. O. Nutting & Son, Indianola, Iowa; J. Roelofson, Maryville, Mo.; C. A. Saunders, Manilla, Iowa; Truman's Pioneer Stud Farm, Bushnell, Ill.; T. H. Weil, Blairstown, Iowa.

AWARDS.

JUDGE.....................JOHN DELANCY, Northwood, Minn.
JUDGE....................ROBERT MILLER, Stouffville, Ontario.

Stallion Four Years or Over—First, Acrobat 68416, J. Crouch & Son; second, Gillot 52018 (69846), Maasdam & Wheeler; third, Guy Lussac 61947 (66946), M. J. Nelson; fourth, Lamy (56473) 46057; fifth, Gavial 61373 (69712).

Stallion Over Three, Under Four—First, Hieroglyphe 60338 (76356), Robt. Burgess & Son; second, Naro 63513 (74369), Peter Hopley & Son; third, Vonmore 63995, H. G. McMillan & Sons; fourth, Horion 75984, Finch Bros.; fifth, Hi-la-dy 61402 (74403).

Stallion Over Two, Under Three—First, Insouciant 83443, J. Crouch & Son; second, Matador 64861, H. G. McMillan & Sons; third, Intro 69490 (81320), Robt. Burgess & Son; fourth, Izola 69198 (79992), Wm. Crownover.

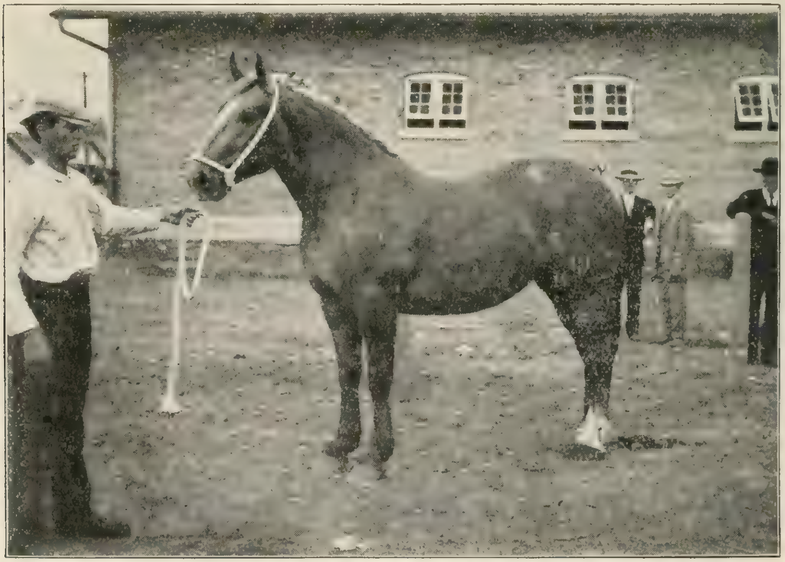
Stallion Over One, Under Two—First, Javannais 69499 (83811), Robt. Burgess & Son; second, Loraine 68731, H. G. McMillan & Sons; third, Jerobaone 89305, Maasdam & Wheeler.

Stallion Foal—First, Newton Gafrannus, E. N. Gates; second, King Herman 69307, M. J. Nelson; third, Iowa Count 69703, C. B. Dannen & Sons.

Stallion Three Years or Over, Bred by Exhibitor—First, Vonmore 63995, H. G. McMillan & Sons; second, St. Peirre 63584, H. G. McMillan & Sons; third, Tacheau 55899, Maasdam & Wheeler.

Stallion Under Three, Bred by Exhibitor—First, Loraine 68731, H. G. McMillan & Sons; second, Matador 64861, H. G. McMillan & Sons; third, Ambrose 67599, H. G. McMillan & Sons; fourth, Gilbert 68897.

Mare Four Years or Over—First, Hellen, Robt. Burgess & Son; second, Manie 54817, J. Crouch & Son; third, Castile 43918 (61058), E. N. Gates; fourth, Lurietta 65281, Maasdam & Wheeler.



"AUDREY 60789"
Champion Percheron Mare, bred by exhibitor
Iowa State Fair and Exposition, 1910

Filly Over Three, Under Four—First, Himere 84279, J. Crouch & Son; second, Harmonieuse 69150 (78420), S. Metz & Sons; third, Hanche (77830), Robt. Burgess & Son.

Filly Over Two, Under Three—First, Indienne 80794, J. Crouch & Son; second, Impudent (81933), Robt. Burgess & Son; third, Audrey 60789, H. G. McMillan & Sons.

Filly Over One, Under Two—First, Pinafore 68744, H. G. McMillan & Sons; second, Jumillia 87087, Finch Bros.; third, Gertrude 61267, Robt. Burgess & Son.

Mare Foal—First, Coquette 69704, C. B. Dannen & Sons.

Mare Three Years or Over, Bred by Exhibitor—First, Angeline 65280, Maasdam & Wheeler; second, Jolanthe 40925, H. G. McMillan & Sons; third, Black Star 65269, Maasdam & Wheeler; fourth, Velma 65289, Maasdam & Wheeler.

Mare Under Three, Bred by Exhibitor—First, Audrey 60789, H. G. McMillan & Sons; second, Columbia 69929, H. G. McMillan & Sons; third, Pinafore 68744, H. G. McMillan & Sons; fourth, C. B. Dannen & Sons.

Champion Stallion—First, Hieroglyhe 60338 (76356), Robt. Burgess & Son; second, Garranti 72965, J. Crouch & Son.

HIMERE 84279
Grand Champion Percheron Mare
Iowa State Fair and Exposition, 1910

Champion Mare—Himere 84279, J. Crouch & Son; second, Hellen, Robt. Burgess & Son.

Champion Stallion, Owned in Iowa—First, Naro 63513 (74369), Peter Hopley & Son; second, Vonmore 63995, H. G. McMillan & Son.

Champion Mare, Owned in Iowa—First, Audrey 60789, H. G. McMillan & Sons; second, Velma, Maasdam & Wheeler.

Get of Stallion—First, ————, H. G. McMillan & Sons; second, ————, Maasdam & Wheeler; third, ————, H. G. McMillan & Sons; fourth, ————, C. B. Dannen & Sons.

Produce of Mare—First, ————, H. G. McMillan & Sons; second, ————, H. G. McMillan & Sons; third, ————, Maasdam & Wheeler.

Grand Display—First, ————, H. G. McMillan & Son; second, ————, Maasdam & Wheeler; third, ————, H. G. McMillan & Son; fourth, ————, C. B. Dannen & Sons.

SPECIAL PRIZES BY THE PERCHERON SOCIETY OF AMERICA.

Champion Stallion Bred by Exhibitor—First, Vonmore 63995, H. G. McMillan & Sons; second, Loraine 68731, H. G. McMillan & Sons.

Champion Mare Bred by Exhibitor—First, Audrey 60789, H. G. McMillan & Sons.

CLYDESDALE.

EXHIBITORS.

Peter Birgen, New Hampton, Iowa; Forbes Bros., Beckton Farm, Sheridan, Wyo.; Joseph Gissibl, Anita, Iowa; McLay Bros., Janesville, Wis.; Frank Shekleton, Lawler, Iowa; A. G. Soderberg, Osco, Ill.; John Leitch, LaFayette, Ill.

AWARDS.

JUDGE.......................PROF. W. J. KENNEDY, Ames, Iowa.

Stallion Four Years or Over—First, Kelvin Chief 15164, McLay Bros.; second, Greathill Chief 13809 (14461), Joseph F. Gissibl; third, Goldrock 14494 (14150), Peter Birgen; fourth, John Humphrey 15146, McLay Bros.; fifth, Westward Ho 14495 (14886), Frank P. Shekleton.

Stallion Over Three, Under Four—First, Beckton Barrister 13633, Forbes Bros.; second, Beckton Glengold 13635, Forbes Bros.; third, Sylvan Baron 13858, W. W. Weston & Son; fourth, Prince Goldie 13632, Forbes Bros.

Stallion Over Two, Under Three—First, Samuda 15165, McLay Bros.; second, Mae of Anita 13836, Joseph F. Gissibl; third, Osco Dagmar Prince, 13898, A. G. Soderberg; fourth, Kings Deputy 14423, McLay Bros.

Stallion Over One, Under Two—First, Beckton Hero 14711, Forbes Bros.; second, Osco Victor, A. G. Soderberg; third, Beckton Baronet 14712, Forbes Bros.

Stallion Foal—First, Barons Hope Prince, A. G. Soderberg.

Stallion Three Years or Over, Bred by Exhibitor—First, Beckton Barrister 13633, Forbes Bros.; second, Beckton Glengold 13635, Forbes Bros.; third, Prince Goldie 13632, Forbes Bros.; fourth, Beckton Explorer 12848, Forbes Bros.

Stallion Under Three, Bred by Exhibitor—First, Mae of Anita 13838, Joseph F. Gissibl; second, Osco Victor, A. G. Soderberg; third, Beckton

Barometer 14274, Forbes Bros.; fourth, Beckton Hero 14711, Forbes Bros.

Mare Four Years or Over—First, Lady de Bathe 14638, McLay Bros.; second, Miss Fanny 15158, McLay Bros.; third, Beckton Countess 12837, Forbes Bros.; fourth, Lincluden Majorie 14640, McLay Bros.

Filly Over Three, Under Four—First, Dorthy Vernon 13610, W. W. Weston & Son; second, Flora of Anita 13382, Joseph F. Gissibl; third, Belle of Montrose 15153, McLay Bros.; fourth, Beckton Princess 13637, Forbes Bros.

Filly Over Two, Under Three—First, Bessie Winsome 15151, McLay Bros.; second, Western Girl 14277, Forbes Bros.; third Madcap Violet 15157, McLay Bros.

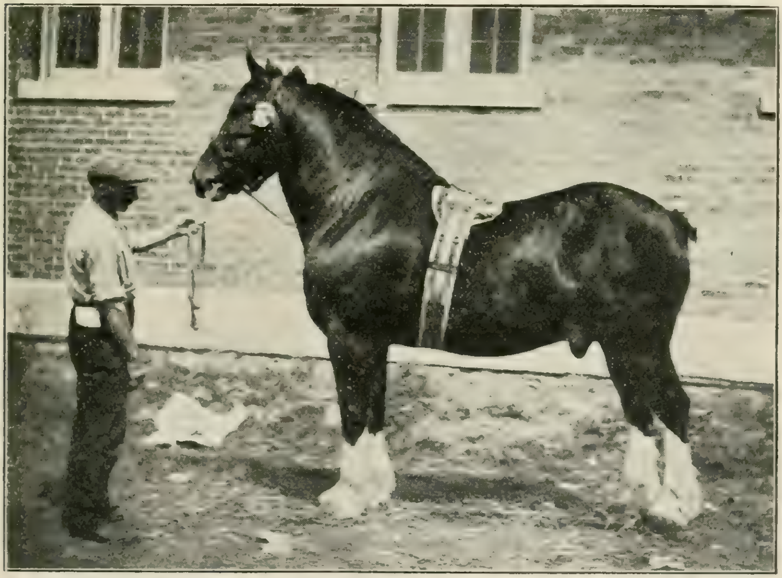
Filly Over One Under Two—First, Graceful Lady 14854, McLay Bros.; second, Beauty's Maid 14857, McLay Bros.; third Beckton Lassie 14718, Forbes Bros.

Mare Foal—First, Osco Barons Sweetness, A. G. Soderberg.

Mare Three Years or Over, Bred by Exhibitor—First, ————, McLay Bros.; second, Beckton Countess, Forbes Bros.; third, Flora of Anita 13382, Joseph F. Gissibl; fourth, Princess 13637, Forbes Bros.

Mare Under Three, Bred by Exhibitor—First, Graceful Lady 14854, McLay Bros.; second, Beauty's Maid 14857, McLay Bros.; third, Weston Girl 14277, Forbes Bros.; fourth, Beckton Lassie 14718, Forbes Bros.

Champion Stallion—First, Kelvin Chief 15164, McLay Bros.; second, ————, Joseph Gissibl.



KELVIN CHIEF 15164
Champion Clydesdale Stallion
Iowa State Fair and Exposition, 1910

Champion Mare—First, Lady de Bathe 14638, McLay Bros.; second, ———, McLay Bros.

Champion Stallion, Owned in Iowa—First, Greathill Chief, Joseph Gissibl; second, Mae of Anita 13836, Joseph Gissibl.

Champion Mare, Owned in Iowa—First, Dorothy Vernon 13610, W. W. Weston & Son; second, Flora of Anita 13382, Joseph F. Gissibl.

Get of Stallion—First, ———, Forbes Bros.; second, ———, Forbes Bros.; third, ———, Joseph F. Gissibl; fourth, ———, A. G. Soderberg.

Produce of Mare—First, ———, Forbes Bros.; second, ———, Joseph F. Gissibl; third, ———, Forbes Bros.

Grand Display—First, ———, Forbes Bros.; second, ———, Forbes Bros.; third, ———, A. G. Soderberg.

SPECIAL PRIZES OFFERED BY THE AMERICAN CLYDESDALE ASSOCIATION.

Stallion Three Years Old or Over—First, Kelvin Chief 15164, McLay Bros.; second, Greathill Chief 13809 (14461), Joseph F. Gissibl; third, Beckton Barrister 13633, Forbes Bros.

Stallion Two Years Old and Under Three—First, Samuda 15165, McLay Bros.; second, Mae of Anita 13838, Joseph F. Gissibl; third, Osco Dagmar Prince 13898, A. G. Soderberg; fourth, Kings Deputy 14423, McLay Bros.

Stallion One Year Old and Under Two—First, Beckton Hero 14711, Forbes Bros.; second, Osco Victor, A. G. Soderberg; third, Beckton Baronet 14712, Forbes Bros.

Mare Three Years Old and Over—First, Lady de Bathe 14638, McLay Bros.; second, ———, McLay Bros.; third, Miss Fanny 15158, McLay Bros.

Mare Two Years Old and Under Three—First, Bessie Winsome 15151, McLay Bros.; second, Western Girl 14277, Forbes Bros.; third, Madcap Violet 15157, McLay Bros.

Mare One Year Old and Under Two—First, Graceful Lady 14854, McLay Bros.; second, Beauty's Maid 14857, McLay Bros.; third, Beckton Lassie 14718, Forbes Bros.

ENGLISH SHIRES.

EXHIBITORS.

Robt. Burgess & Son, Wenona, Ill.; J. Crouch & Son, LaFayette, Ind.; Crawford & Griffin, Newton, Iowa; Wm. Crownover, Hudson, Iowa; Finch Bros., Joliet and Verona, Ill.; J. M. Gross, Waukee, Iowa; Peter Hopley & Son, Lewis, Iowa; Frank E. Huston, Waukee, Iowa; S. Metz & Sons, Homewood, Ill.; J. A. Sage, Ankeny, Iowa; A. G. Soderberg, Osco, Ill.; Truman's Pioneer Stud Farm, Bushnell, Ill.; Union Wrecking Company, Des Moines, Iowa.

AWARDS.

JUDGE..........................R. B. OGILVIE, Chicago, Ill.

Stallion Four Years or Over—First, Dan Patch (25815), Truman's Pioneer Stud Farm; second, Cathedral Herald 25053, J. Crouch & Son; third, Haynes Victor (25270), Truman's Pioneer Stud Farm; fourth, Bury Prince of Fashion (26005), Trumans' Pioneer Stud Farm; fifth, Gillibrano Hero 9438 (24847), Peter Hopley & Son.

Stallion Over Three, Under Four—First, Charterhouse Cardinal (26037), Truman's Pioneer Stud Farm; second, Constitutional 4th 11051, Finch Bros.; third, Billingford Brewer (27024), Truman's Pioneer Stud Farm; fourth, Farmers Grey (26213), Truman's Pioneer Stud Farm; fifth, Bury Permit (27151), Truman's Pioneer Stud Farm.

CHAMPION AMERICAN BRED SHIRE STALLION (under 3 yrs.)
Iowa State Fair and Exposition, 1910

Stallion Over Two, Under Three—First, Moulton Truffle (27602), Truman's Pioneer Stud Farm; second, Clifton Present Time, Robt. Burgess & Son; third, Johnson Traitor 11266 (27460), Peter Hopley & Son; fourth, Moulton Atlantic (27598), Truman's Pioneer Stud Farm.

Stallion Over One, Under Two—First, Osco Meightor, A. G. Soderberg; second, Osco Headlight, A. G. Soderberg; third, Flynn 11390, Wm. Crownover; fourth, Captain III 11578, S. Metz & Sons.

Stallion Foal—First, Paramount Rex 11639, Wm. Crownover; second, ————, Crawford & Griffin; third, Sir Moulton Drextell, Frank E. Huston; fourth, Ortonville Duke, J. M. Gross.

Stallion Three Years or Over, Bred by Exhibitor—First, Osco Barons Prince 9847, A. G. Soderberg; second, Ankeny Banker 8772, J. A. Sage.

Stallion Under Three, Bred by Exhibitor—First, Paramount Rex 11639, Wm. Crownover; second, Osco Meightor, A. G. Soderberg; third, Osco Headlight, A. G. Soderberg.

Mare Four Years or Over—First, Shelford Pride (46221), Truman's Pioneer Stud Farm; second, Fuchsia II (51149), Truman's Pioneer Stud Farm; third, Lady Brown 10973, Frank E. Huston; fourth, Fashion Plate 8771, J. A. Sage.

Filly Over Three, Under Four—First, Prospect Fair Alice (58075), Robt. Burgess & Son; second, Moulton Primella 10619 (58936), Wm. Crownover; third, Geraldine 9742, Wm. Crownover; fourth, Ankeny Flora 10528, J. A. Sage.

Filly Over Two, Under Three—First, Elveden Hyacinth (60260), Truman's Pioneer Stud Farm; second, Carlton Bouquet 10935 (58963), Crawford & Griffin; third, Tnenant Cinderella 10622 (58932), Wm. Crownover; fourth, Ankeny Starlight (10529), J. A. Sage.

Filly Over One, Under Two—First, Cora Crown 11638, Wm. Crownover; second, Silver Streak 11524, J. A. Sage.

Mare Foal—First, ————, J. A. Sage; second, ————, J. A. Sage; third, Osco Eaco, A. G. Soderberg.

Mare Three Years or Over, Bred by Exhibitor—First, Black Bess 6943, Finch Bros.; second, Fashion Plate 8771, J. A. Sage; third Ankeny Flora 10528, J. A. Sage.

Mare Under Three, Bred by Exhibitor—First, Cora Crown 11638, Wm. Crownover; second, Silver Streak 11524, J. A. Sage; third, Ankeney Starlight 10529, J. A. Sage.

Champion Stallion—First, Dan Patch (25815), Truman's Pioneer Stud Farm; second, Charterhouse Cardinal (26037), Truman's Pioneer Stud Farm.

English Gold Medal—Dan Patch (25815), Truman's Pioneer Stud Farm.

American Silver Cup—Dan Patch (25815), Truman's Pioneer Stud Farm.

Champion Mare—First, Shelford Pride (46221), Truman's Pioneer Stud Farm; second, Prospect Fair Alice (58075), Robt. Burgess & Son.

English Gold Medal—Shelford Pride (46221), Truman's Pioneer Stud Farm.

American Silver Cup—Shelford Pride (46221), Truman's Pioneer Stud Farm.

Champion Stallion, Owned in Iowa—First, Gillibrano Hero 9438 (24847), Peter Hopley & Son; second, Paramount Rex 11639, Wm. Crownover.

Champion Mare, Owned in Iowa—Lady Brown 10973, Frank E. Huston; second, Moulton Primella 10619 (58936), Wm. Crownover.

Get of Stallion—First, ————, J. A. Sage.

Produce of Mare—First, ————, J. A. Sage; second, ————, Wm. Crownover; third, ————, A. G. Soderberg.

Grand Display—First, ————, A. G. Soderberg; second, ————, J. A. Sage; third, ————, Finch Bros.

BELGIAN.

EXHIBITORS.

Robt. Burgess & Son, Wenona, Ill.; J. Crouch & Son, LaFayette, Ind.; Crawford & Griffin, Newton, Iowa; Wm. Crownover, Hudson, Iowa; Finch Bros., Joliet and Verona, Ill.; G. W. Grigsby, Madrid, Iowa; J. M. Gross, Waukee, Iowa; Peter Hopley & Son, Lewis, Iowa; Chas. Irvine, Ankeny, Iowa; C. E. Jones, Madrid, Iowa; Henry Lefebure, Fairfax, Iowa; J. A. Loughridge, Delta, Iowa; A. M. Van Steenberge, Ogden, Iowa.

AWARDS.

JUDGE.........................ALEX GALBRAITH, DeKalb, Ill.

Stallion Four Years or Over—First, Bonaparte de Boulant 45888, J. Crouch & Son; second, Pierriot D. B. C. 3782, Finch Bros.; third, Julien De Lobbes 46710, Finch Bros.; fourth, Jacob 47102, J. Crouch & Son; fifth, Cognet 2766 (41852), Chas. Irvine.

Stallion Over Three, Under Four—First, Carol D. Abee 4807, Finch Bros.; second, Tobias du Kat, 4713, Peter Hopley & Son; third, Robt. 2 De Rum 3595 (46686), Chas. Irvine; fourth, Marquis de Pauly 4493, Henry Lefebure; fifth, Acme Chief 2691, Finch Bros.

Stallion Over Two, Under Three—First, St. Leonard, Vol. XVII, p. 448, J. Crouch & Son; second, Joubert d' Ecaussinnes, Vol. XVII, p. 1064, J. Crouch & Son; third, Espoir de Buydens, Vol. XVII, Finch Bros.

Stallion Over One, Under Two—First, Faro de Tripsee 4923, Wm. Crownover; second, Lion de Flandore II 58684, J. Crouch & Son; third, Briand 4024, Henry Lefebure.

Stallion Foal—First, Edward, Henry Lefebure; second, Coe, Chas. Irvine; third, ————, Chas. Irvine.

Stallion Three Years or Over, Bred by Exhibitor—First, Acme Chief 2691, Finch Bros.

Stallion Under Three, Bred by Exhibitor—First, Just Inn, Finch Bros.; second, ————, J. A. Loughridge; third, Edward, Henry Lefebure; fourth, Bijou 4783, J. M. Gross.

Mare Four Years or Over—First, Catherina 67399, J. Crouch & Son; second, Madame 2d 399, J. A. Loughridge; third, Duivelinne 8375, Chas. Irvine; fourth, Grisette P 54461, Henry Lefebure.

Filly Over Three, Under Four—First, Martine du Jonguoy, Vol. XVI, J. Crouch & Son; second, Caline d' Uccle 1091, C. E. Jones; third Ben Marche 114 (66719), Chas. Irvine.

Filly Over Two, Under Three—First, Corade Fayt, Vol. XVII, p. 544, J. Crouch & Son; second, Rachel 1059, Henry Lefebure; third, Sirene 1575, Wm. Crownover.

Filly Over One, Under Two—First, Germaine 1042, Henry Lefebure; second, Maud, Finch Bros.; third, Mac, Finch Bros.

Mare Foal—First, ———, Finch Bros.; second, ———, Chas. Irvine; third, ———, Chas. Irvine.

Mare Three Years or Over, Bred by Exhibitor—First, Princette 472, Henry Lefebure.

Mare Under Three, Bred by Exhibitor—First, ———, Finch Bros.; second, ———, J. A. Loughridge; third, ———, J. A. Loughridge.

BELGIAN STALLION—CHAMPION OF IOWA CLASS
Iowa State Fair and Exposition, 1910

Champion Stallion—First, Bonaparte de Boulant 45888, J. Crouch & Son; second, Carol D. Abee 4807, Finch Bros.

Champion Mare—First, Catherina 67399, J. Crouch & Son; second, Corade Fayt Vol. XVII, p. 544, J. Crouch & Son.

Champion Stallion, Owned in Iowa—First, Tobis de Kat 4713, Peter Hopley & Son; second, Faro de Tripsee 4923, Wm. Crownover.

Champion Mare, Owned in Iowa—First, Caline d' Uccle 1091, C. E. Jones; second, Madame 2d 399, J. A. Loughridge.

Get of Stallion—First, ———, Finch Bros.; second, ———, J. A. Loughridge; third, ———, Chas. Irvine.

Produce of Mare—First, ————, Finch Bros.; second, ————, J. A. Loughridge; third, ————, Finch Bros.

Grand Display—First, ————, Finch Bros.; second, ————, Chas. Irvine.

SPECIAL PRIZES OFFERED BY THE AMERICAN ASSOCIATION OF IMPORTERS AND BREEDERS OF BELGIAN DRAFT HORSES.

Stallion Four Years Old or Over—First, Bonaparte de Boulant 45888, J. Crouch & Son; second, Pierriot D. B. C. 3782, Finch Bros.; third, Julien De Lobbes 46710, Finch Bros.; fourth, Jacob 47102, J. Crouch & Son; fifth, Cognet 2766 (41852), Chas Irvine.

Stallion Three Years Old and Under Four.—First, Carol D. Abee 4807, Finch Bros.; second, Tobis Du Kat 4713, Peter Hopley & Son; third, Robt. 2 De Rum 3595 (46686), Chas. Irvine; fourth, Marquis de Pauly 4493, Henry Lefebure; fifth, Acme Chief 2691, Finch Bros.

Stallion Two Years Old and Under Three—First, St. Leonard, Vol. XVII, p. 1288, J. Crouch & Son; second, Joubert d' Ecaussinnes, Vol. XVII, J. Crouch & Son; third, Espoir de Buydens, Vol. XVII, Finch Bros.; fourth, Moselli 58726, Finch Bros.; fifth, Marius de Lievin 4925, Wm. Crownover.

Champion Stallion, All Ages Competing—First, Bonaparte de Boulant 45888, J. Crouch & Son; second, Carol D. Abee 4807, Finch Bros.

Champion Mare, All Ages Competing—First, Rosa 908, J. Crouch & Son; second, Corade Fayt, Vol. XVII, p. 544, J. Crouch & Son.

DRAFT GELDINGS AND MARES.

EXHIBITORS.

Jno. Albaugh, Ankeny, Iowa; Andrew Barnes, Lawler, Iowa; Robt. Burgess & Son, Wenona, Ill.; J. Crouch & Son, LaFayette, Ind.; Crawford & Griffin, Newton, Iowa; J. Aug. Carlson, Ogden, Iowa; Loren Dunbar, Earlham, Iowa; Finch Bros., Joliet and Verona, Ill.; Forbes Bros., Beckton Stock Farm, Sheridan, Wyo.; E. N. Gates, Newton, Iowa; J. M. Gross, Waukee, Iowa; B. T. Haulman, Ankeny, Iowa; Frank E. Huston, Waukee, Iowa; Chas. Irvine, Ankeny, Iowa; C. E. Jones, Madrid, Iowa; John Leitch, LaFayette, Ill.; J. A. Loughridge, Delta, Iowa; S. Metz & Sons, Homewood, Ill.; H. G. McMillan & Sons, Rock Rapids, Iowa; J. J. McMahon, Waucoma, Iowa; M. J. Nelson, Cambridge, Iowa; J. F. Roelofson, Maryville, Mo.; C. A. Saunders, Manilla, Iowa; A. G. Soderberg, Osco, Ill.; Truman's Pioneer Stud Farm, Bushnell, Ill.; T. H. Weil, Blairstown, Iowa.

AWARDS.

JUDGE........................R. B. OGILVIE, Chicago, Ill.

Gelding or Mare Four Years or Over—First, Bird, Chas. Irvine; second, Polly Westfall, Andrew Barns; third, Bessie, Jno. S. Albaugh; fourth, Colly, J. M. Gross.

Gelding or Mare Three Years and Under Four—First, Prince, John S. Albaugh; second, Queen, Chas. Irvine; third, Prince, J. M. Gross.

Gelding or Mare Two Years and Under Three—First, Taft, John S. Albaugh; second, Newton Queen, Crawford & Griffin; third, Flory, Chas. Irvine; fourth, Babe, J. M. Gross.

Gelding or Mare One Year and Under Two—First, ————, Chas. Irvine, second, ————, Loren Dunbar; third, Maud, J. M. Gross.

Horse or Filly Foal—First, Chief of Ankeny, B. T. Haulman; second, ————, J. J. McMahon; third, Alice, John S. Albaugh; fourth, ————, Chas. Irvine.

Best Farmer's Team—First, ————, E. N. Gates; second, ————, Chas. Irvine; third, ————, J. A. Loughridge; fourth, ————, Chas. Irvine; fifth, ————, Loren Dunbar.

To Groom Having Fitted First Prize Aged Gelding or Mare—First, Bird, Chas. Irvine.

To Groom Having Fitted First Prize Three-Year-Old Gelding or Mare—Prince, John S. Albaugh.

To Groom Having Fitted First Prize Two-Year-Old Gelding or Mare—Taft, John S. Albaugh.

To Groom Having Fitted First Prize Yearling Gelding or Mare—Chas. Irvine.

To Grooms Having Fitted Teams in Section 90—First, E. N. Gates; second, Chas. Irvine; third, J. A. Loughridge; fourth, Chas. Irvine.

Gelding or Mare Four Years or Over—First, ————, J. Crouch & Son; second, ————, J. Crouch & Son; third, ————, J. Crouch & Son; fourth, ————, J. Crouch & Son.

Draft Team in Harness—First, J. Crouch & Son; second, J. Crouch & Son; third, E. N. Gates; fourth, J. A. Loughridge.

Champion Mare of Gelding—First, ————, J. Crouch & Son; second, Prince, John S. Albaugh.

Four Horse Team—First, J. Crouch & Son.

Sir Horse Team—First, J. Crouch & Son.

STANDARD BRED TROTTERS.

EXHIBITORS.

L. C. Alcott, Fairview, Ill.; Horace Anderson, Des Moines, Iowa; Thos. Bass, Mexico, Mo.; E. J. Brouhard, Colo, Iowa; Fred Crawford, Des Moines, Iowa; Elmore A. Elliott, Des Moines, Iowa; W. J. Estes, Omaha, Nebr.; Ira Hall, Des Moines, Iowa; W. A. Helsell, Odebolt, Iowa; O. A. Luce, Des Moines, Iowa; C. D. McPherson, Fairfield, Iowa; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; L. H. Pickard & Bro., Harlan, Iowa; Thomas F. Stevenson, Des Moines, Iowa; W. E. Shugg, Anita, Iowa; James Watts, Des Moines, Iowa; H. C. Young, Des Moines, Iowa.

AWARDS.

JUDGE.....................W. A. DOBSON, Des Moines, Iowa.

Stallion Four Years or Over—First, Tommy Doyl 50261, J. R. Peak & Son; second, Hail Cloud 2:07¾ 23606, James Watt; third, Black Rex 52603, Fred Crawford; fourth, Capo, 31066, L. H. Pickard & Bro.

Stallion Over Three, Under Four—First, Logan 50267, J. R. Peak & Son; second, John Hail, James Watt.

Stallion Over Two, Under Three—First, Leader of Fashion, J. R. Peak & Son; second, O. J. Mooers; third, Conroy Blake, Horace L. Anderson.

Stallion Over One, Under Two—First, Uncle Jacob, J. R. Peak & Son; second, Ice King 51288, L. C. Alcott; third, Onwood Attorney 51352, L. H. Pickard & Bro.

Stallion Foal—First, L. H. Pickard & Bro.; second, ————, E. J. Brouhard; third, J. W. B. Jr. of Fairfield, C. D. McPherson.

Mare Four Years or Over—First, Winnie Blake, Horace L. Anderson; second, Helen Blares, Vol. 18, J. R. Peak & Son; third, Tom Bass; fourth, Sandy Nell, W. A. Helsell.

Filly Over Three, Under Four—First, Baby, Vol. 18, J. R. Peak & Son.

Filly Over Two, Under Three—First, Gregory, J. R. Peak & Son; second, Miss Wavie, W. E. Shugg; third, Perfect Lady, E. J. Brouhard.

Filly Over One, Under Two—First, Perfect Beauty, E. J. Brouhard; second, Aunt Mary, Vol. 19, J. R. Peak & Son; third, Jean Barlow, Fred Crawford.

Mare Foal—First, ————, L. H. Pickard & Bro.; second, St. Louis Maid, J. R. Peak & Son.

Champion Stallion—First, Tommy Doyle, J. R. Peak & Son; second, Leader of Fashion, J. R. Peak & Son.

Champion Mare—First, Winnie Blake, Horace Anderson; second, Baby, Vol. 18, J. R. Peak & Son.

Get of Stallion—First, J. R. Peak & Son; second, J. R. Peak & Son; third, L. H. Pickard & Bro.

Produce of Mare—First, J. R. Peak & Son; second, J. R. Peak & Son; fourth, E. J. Brouhard.

AMERICAN CARRIAGE HORSES.

EXHIBITORS.

Horace L. Anderson, Des Moines, Iowa; A. S. Burr, Bement, Ill.; Thos. Bass, Mexico, Mo.; Geo. Bacon, Amboy, Ill.; Joseph C. Brunk, Springfield, Ill.; E. J. Brouhard, Colo, Iowa; Chas. E. Bunn, Peoria, Ill.; C. F. Dewey, Amboy, Ill.; Elmore A. Elliott, Des Moines, Iowa; W. J. Estes, Omaha, Nebr.; W. A. Helsell, Odebolt, Iowa; O. J. Mooers, Columbia, Mo.; S. B. Mills, Ames, Iowa; C. D. McPherson, Fairfield, Iowa; J. R. Peak & Son, Winchester, Ill.; L. H. Pickard & Bro., Harlan, Iowa; Roebuck Farms, Indianapolis, Ind.; W. E. Shugg, Anita, Iowa; P. F. Smith, Montezuma, Iowa; M. H. Templeton, Ames, Iowa; Wildrose Farm, St. Charles, Ill.

AWARDS.

JUDGE.....................W. A. DOBSON, Des Moines, Iowa.

Stallion Four Years or Over—First, Roy Morgan, Wild Rose Farm; second, Tommy Doyl 50261, J. R. Peak & Son; third, Cleveland Reade, O. J. Mooers.

Stallion Over Three, Under Four—First, no award made; second, Admiral George Dewey, C. F. Dewey; third, ———, O. J. Mooers.

Stallion Over Two, Under Three—First, no award made; second, Leader of Fashion, J. R. Peak & Son; third, ———, O. J. Mooers.

Stallion Over One, Under Two—First, no award made; second, Glorious Silver Cloud, H. M. Templeton & Son; third, Sangamo, Jos. C. Brunk; fourth, Knox All, P. F. Smith.

Stallion With Three of His Get, of Either Sex—First, no award made; second, C. F. Dewey; third, J. R. Peak & Son.

Mare Four Years, or Over—First, The Lavender Lady, O. J. Mooers; second, Katy Darling, Roebuck Farms; third, ———, Wild Rose Farm.

Mare Over Three, Under Four—First, no award made; second, Queen of Clubs, Wild Rose Farm; third, Louise McDonald, O. J. Mooers.

Mare Over Two, Under Three—First, no award made; second, Merl Morgan, S. B. Mills; third, Perl Morgan, S. B. Mills; fourth, Senorita, Jos. C. Brunk.

Mare Over One, Under Two—First, no award made; second, Aneta, Jos. C. Brunk; third, Lady Pactolus.

Mare and Foal of Either Sex—First, no award made; second, Daisy De Janette, Jos. C. Brunk; third, ———, E. J. Brouhard.

Stallion or Mare Foal—First, Princess; second, ———, E. J. Brouhard; third, Aristocrat, C. F. Dewey.

Champion Stallion—First, Roy Morgan, Wild Rose Farms.

Champion Mare—First, The Lavender Lady, O. J. Mooers.

ROADSTERS.

EXHIBITORS.

Horace L. Anderson, Des Moines, Iowa; Thos. Bass, Mexico, Mo.; A. S. Burr, Bement, Ill.; E. J. Brouhard, Colo, Iowa; Joseph C. Brunk, Springfield, Ill.; H. P. Dudley, Greenfield, Iowa; Ira Hall, Des Moines, Iowa; W. A. Helsell, Odebolt, Iowa; Hopper Stock Farm, Indianola, Iowa; J. R. Hughes, Mt. Pleasant, Iowa; Joe Kennedy, West Liberty, Iowa; C. D. McPherson, Fairfield, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.

AWARDS.

JUDGE.....................J. F. GARRISON, Des Moines, Iowa.

Single Mare or Gelding—First, Helen Blares, J. R. Peak & Son; second, Charlotte C., W. A. Helsell; third, Petra M, Tom Bass; fourth, Winnie Blake, Horace L. Anderson.

Pair Mares or Geldings or Mare and Gelding—First, J. R. Peak & Son; second, Tom Bass; third, W. A. Helsell; fourth, J. R. Peak & Son.

RUN-ABOUT.

EXHIBITORS.

Horace L. Anderson, Des Moines, Iowa; Thos. Bass, Mexico, Mo.; A. S. Burr, Bement, Ill.; E. J. Brouhard, Colo, Iowa; Joseph C. Brunk, Springfield, Ill.; W. A. Graham, Des Moines, Iowa; Ira Hall, Des Moines, Iowa; W. A. Helsell, Odebolt, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Mo.; C. D. McPherson, Fairfield, Iowa; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Ind.; Wild Rose Farms, St. Charles, Ill.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Single Mare or Gelding—First, Flashlight, Roebuck Farms; second Lovely Lady, J. R. Peak & Son; third, The Lavender Lady, O. J. Mooers; fourth, Twillmonia, O. J. Mooers.

Pair Mares or Geldings or Mare and Gelding—First, ————, O. J. Mooers; second, ————, J. R. Peak & Son; third, ————, Wild Rose Farms; fourth, C. E. Monahan.

Single Mare or Gelding—First Charlotte C, W. A. Helsell; second, Winnie Blake, Horace L. Anderson; third, Sandy Nell, W. A. Helsell; fourth, Bess, C. E. Monahan.

FAMILY TURNOUT.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; A. S. Burr, Bement, Ill.; H. P. Dudley, Greenfield, Iowa; Joe Kennedy, West Liberty, Iowa; C. D. McPherson, Fairfield, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Indiana.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Single horse Family Turnout—First, Black Bess, C. E. Monahan.

LADIES TURNOUT.

EXHIBITORS.

Horace L. Anderson, Des Moines, Iowa; Thos. Bass, Mexico, Mo.; Mrs. M. M. Fenlon, Des Moines, Iowa; Wm. Mason, Carlisle, Iowa; Miss Louise McGreggor, Des Moines, Iowa; C. D. McPherson, Fairfield, Iowa; C. E. Monahan, Des Moines, Iowa; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Ind.

Single Mare or Gelding—First, Katy Darling, Roebuck Farms; second, The Lavender Lady, O. J. Mooers; third, Sapphire, Roebuck Farms; fourth, Black Bess, C. E. Monahan.

Pair Mares or Geldings or Mare and Gelding—First, ————, Roebuck Farms; second, ————, O. J. Mooers; third, ————, Roebuck Farms; fourth, ————, C. E. Monahan.

HIGH STEPPERS AND PARK HORSES.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; Chas. E. Bunn, Peoria, Ill.; H. C. Davis, Ames, Iowa; H. P. Dudley, Greenfield, Iowa; Ira Hall, Des Moines, Iowa; Geo. A. Heyl, Washington, Ill.; Joe Kennedy, West Liberty, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Ind.; P. F. Smith, Montezuma, Iowa; Wild Rose Farms, St. Charles, Ill.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Single Mare or Gelding, 15-2 and Under—First, Moss Rose, Wild Rose Farms; second, The Lavender Lady, O. J. Mooers; third, Katy Darling, Roebuck Farms; fourth, Flashlight, Roebuck Farms.

Single Mare or Gelding, 15-2 and Over—First, Sapphire, Roebuck Farms; second, Red Rose, Wild Rose Farms; third, Prince, Roebuck Farms; fourth, White Rose, Wild Rose Farms.

Pair Mares or Geldings, or Mare and Gelding, 15-2 and Under—First, ————, Wild Rose Farms; second, ————, Roebuck Farms; third, ————, O. J. Mooers; fourth, ————, J. R. Peak & Son.

Pair Mares or Geldings, or Mare and Gelding, Over 15-2—First, ————, Roebuck Farms; second, ————, Roebuck Farms, third, ————, Wild Rose Farms; fourth, ————, J. R. Peak & Son.

Single Mare or Gelding—First, Billy O'Leary, Joe Kennedy; second, Bess, C. E. Monahan; third, King Robert, C. E. Monahan; fourth, Lady V., P. F. Smith.

Pair Mares or Gelding, or Mare and Gelding—First, King Robert and Bess, C. E. Monahan.

GIG HORSES.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; Chas. E. Bunn, Peoria, Ill.; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Ind.; Truman's Pioneer Stud Farm, Bushnell, Ill.; Wild Rose Farms, St. Charles, Ill.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Horses Not Exceeding 15-2—First, Tollington (10464), Truman's Pioneer Stud Farm; second, Zambo 968, Chas. E. Bunn; third, Katy Darling, Roebuck Farms; fourth, Flashlight, Roebuck Farms.

Horses Over 15-2—First, Sapphire, Roebuck Farms; second, Red Rose, Wild Rose Farms; third, Parkwood, Roebuck Farms; fourth, Cleveland Reade, O. J. Mooers.

TANDEMS.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; Joseph C. Brunk, Springfield, Ill.; Chas. E. Bunn, Peoria, Ill.; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Ind.; Wild Rose Farms, St. Charles, Ill.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Tandem Team, Wheeler Over 15-2—First, Sapphire and Salute, Roebuck Farms; second, Prince and Katie Darling, Roebuck Farms; third, Red Rose and White Rose, Wild Rose Farms; fourth, Good Enough and Mate, J. R. Peak & Son.

Tandem Team, Wheeler Under 15-2—First, May Flower and Czarina, Chas. E. Bunn; second, Moss Rose and Roy Morgan, Wild Rose Farms; third, Katy Darling and Flashlight, Roebuck Farms; fourth, Twillmonia and Mate, O. J. Mooers.

UNICORNS.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Ind.; Wild Rose Farms, St. Charles, Ill.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Unicorn Team—First, Roebuck Farms; second, Roebuck Farms; third, J. R. Peak & Son; fourth, J. R. Peak & Son.

FOUR-IN-HANDS.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; Roebuck Farms, Indianapolis, Ind.; Wild Rose Farms, St. Charles, Ill.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Road Four—First, Wild Rose Farms; second, J. R. Peak & Son; third, Roebuck Farms.

Park Four—First, Roebuck Farms; second, J. R. Peak & Son; third, Wild Rose Farms.

SADDLE HORSES.

EXHIBITORS.

Thos. Bass, Mexico, Mo.; E. F. Besser, Newton, Iowa; A. S. Burr, Bement, Ill.; Joseph C. Brunk, Springfield, Ill.; Chas. E. Bunn, Peoria, Ill.; H. C. Davis, Ames, Iowa; W. A. Graham, Des Moines, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Mo.; J. R. Peak & Son, Winchester, Ill.; A. D. Robinson, Sioux City, Iowa; Roebuck Farms, Indianapolis, Ind.

AWARDS.

JUDGE..................JNO. B. CASTLEMAN, Louisville, Ky.

Gelding or Mare Four Years or Over—First, ————, O. J. Mooers; second, Frances McDonald, Tom Bass; third, Irma 2104, A. S. Burr; fourth, Ike, Tom Bass; fifth, Janie Rex, Chas. E. Bunn.

Gelding or Mare Over Three, Under Four—First, ————. Tom Bass; second, Winnie B. 4611, A. S. Burr; third, Eric McDonald, Tom Bass.

Stallion Four Years and Over—First, Rex Chief A. 2473, Tom Bass; second, Chester Peavine 3184, Tom Bass; third, Jet McDonald 3917, Tom Bass; fourth, Matchless 2521, A. S. Burr.

Stallion Over Three, Under Four—First, Golden McDonald, Tom Bass; second, no award made; third, no award made; fourth, Rex Deen, Tom Bass; fifth, Denmark Peavine, Tom Bass.

Champion Stallion, Mare or Gelding—First, Rex Chief A 2473, Tom Bass; second, ————, O. J. Mooers.

WALK, TROT AND CANTER.

Mare or Gelding, Any Age—First, Nugent 3135, A. S. Burr; second, Lady McDonald B., Tom Bass; third, ————, O. J. Mooers; fourth, Salute, Roebuck Farms.

Stallion, Mare or Gelding, Any Age—First, Chester Peavine 3184, Tom Bass; second, Irma 2104, A. S. Burr; third, Mondoslium, O. J. Mooers; fourth, Jet McDonald 3917, Tom Bass.

HIGH SCHOOL HORSES.

Stallion, Mare or Gelding, Any Age—First, Louis A., Tom Bass; second, Blackbird, Tom Bass.

Mare or Gelding Three Years or Over—First, Molly McDonald, W. A. Graham; second, Lady McDonald B., W. A. Graham; third, King Robert, C. E. Monahan.

Stallion Three Years or Over—First, Rex Yolo, E. F. Besser.

MORGANS.

EXHIBITORS.

Geo. Bacon, Amboy, Ill.; Joseph C. Brunk, Springfield, Ill.; C. F. Dewey, Amboy, Ill.; Elmore A. Elliott, Des Moines; S. B. Mills, Ames, Iowa; O. J. Mooers, Columbia, Mo.; P. F. Smith, Montezuma, Iowa; Wild Rose Farms, St. Charles, Ill.

AWARDS.

JUDGE..................GEO. M. ROMMEL, Washington, D. C.

Stallion Three Years or Over—First, Roy Morgan, Wild Rose Farms; second, Dr. Strawn 5553 A. M. R., S. B. Mills; third, Morgan Panic 5003, P. F. Smith.

Stallion Over Two, Under Three—First, Rear Admiral, C. F. Dewey; second, ————, O. J. Mooers; third, Major Reade, Joseph C. Brunk.

Stallion Over One, Under Two—First, Sangamo, Joseph C. Brunk; second, Prince, S. B. Mills; third, Morgan Perfection, Geo. Bacon.

Stallion or Mare Foal—First, Princess Joseph C. Brunk; second Aristocrat, C. F. Dewey; third, Santafa, C. F. Dewey.

Mare Three Years or Over—First, Daisy de Janette, Joseph C. Brunk; second, Queen of Clubs, Wild Rose Farms; third, Queen of Spades, Wild Rose Farms.

Filly Over Two, Under Three—First, Rosalie Wild Rose Farms; second, Merl Morgan, S. B. Mills; third, Senorita, Joseph C. Brunk.

Filly Over One, Under Two—First, Lady Pactolus, S. B. Mills; second, Rosary, Wild Rose Farms; third, Aneta, Joseph C. Brunk.

Champion Stallion—First, Roy Morgan, Wild Rose Farms; second, Dr. Strawn, S. B. Mills.

Champion Mare—First, Rosalie, Wild Rose Farms; second, Daisy De Janette, Joseph C. Brunk.

Get of Sire—First, ————, Wild Rose Farms; second, ————, P. F. Smith.

Grand Display—First, ————, Wild Rose Farms; second, ————, Joseph C. Brunk, third, ————, S. B. Mills.

HACKNEY.

EXHIBITORS.

Chas. E. Bunn, Peoria, Ill.; Robt. Burgess & Son, Wenona, Ill.; J. Crouch & Son, LaFayette, Ind.; A. L. Champlin, Ames, Iowa; Crawford & Griffin, Newton, Iowa; W. A. Graham, Des Moines, Iowa; Henry Lefebure, Fairfax, Iowa; Truman's Pioneer Stud Farm, Bushnell, Ill.

AWARDS.

JUDGE.........................ALEX GALBRAITH, DeKalb, Ill.

Stallion Four Years or Over—First, Imp. International 10719, J. Crouch & Son; second, Tollington (10464), Trumans' Pioneer Stud Farm; third, Imp. Angram Perfection 9587, J. Crouch & Son; fourth, Neptune 632 (7940), Crawford & Griffin.

Stallion Over Three, Under Four—First, Imp. Pockington Protector 10894, J. Crouch & Son.

Stallion Over Two, Under Three—First, New Gold 5335, Chas. E. Bunn; second, Fireman, Chas. E. Bunn.

Stallion or Mare Foal—First, Cadet, Henry Lefebure.

Mare Four Years or Over—First, Fair Eliza 19061, A. L. Champlin; second, Wood Molly 1996, Henry Lefebure; third, Czarina 1836, Chas. E. Bunn; fourth, Carmenceta 2097, Chas. E. Bunn.

Mare Over Three, Under Four—First, May Apple 1837, Chas. E. Bunn.

Mare Over Two, Under Three—First, Onata 2003, Chas. E. Bunn.

Filly Over One, Under Two—First, Onyx 5702, Chas. E. Bunn.

Brood Mare with Foal by Side—First, Wood Molly and Foal 1996, Henry Lefebure.

Champion Stallion—First, Imp. International 10719, J. Crouch & Son; second, Imp. Pockington Protector 10894, J. Crouch & Son.

Champion Mare—First, Onata 2003, Chas. E. Bunn; second, May Apple 1837, Chas. E. Bunn.

Produce of Mare—First, Chas. E. Bunn.

Grand Display—First, Chas. E. Bunn; second, Chas. E. Bunn.

GERMAN AND FRENCH COACH.

EXHIBITORS.

J. Crouch & Son, LaFayette, Indiana.

AWARDS.

JUDGE.........................ALEX GALBRAITH, DeKalb, Ill.

Stallion Four Years or Over—First, Minno 3577, J. Crouch & Son.

Stallion Over Three, Under Four—First, Antonious 31, J. Crouch & Son.

Stallion Over Two, Under Three—First, William, J. Crouch & Son.

Mare Four Years or Over—First, Freifrau 762, J. Crouch & Son.

Champion Stallion—First, Minno 3577, J. Crouch & Son.

Champion Mare—First, Freifrau 762, J. Crouch & Son.

SHETLAND PONIES.

EXHIBITORS.

Chas. Backman, Des Moines, Iowa; Chas. E. Bunn, Peoria, Illinois; Cassidy & Thompson, Jamaica, Iowa; H. C. Davis, Ames, Iowa; John Donhowe, Story City, Iowa; Cloyce Hamilton, Keota, Iowa; Geo. A. Heyl, Washington, Illinois; C. D. McPherson, Fairfield, Iowa; Chas. Parmenter, Des Moines, Iowa; W. T. Roberts, Ames, Iowa; Mrs. Adam Sterling, Des Moines, Iowa; B. B. Welty, Nevada, Iowa; Fred Wright, Milo, Iowa; W. A. Wickersham, Melbourne, Iowa.

AWARDS.

JUDGE.....................PROF. W. J. KENNEDY, Ames, Iowa.

Stallion Three Years or Over—First, McDougal 5697, Geo. A. Heyl; second, Grandee 4423, Chas. E. Bunn; third, Anton 4342, John Donhowe; fourth, Lysander 7072, Chas. E. Bunn.

Stallion Over Two, Under Three—First, Wagga Wagga 8847, Mrs. Adam Sterling; second, David Harum, Jr., Geo. A. Heyl; third, Dunton 10604, John Donhowe; fourth, Clown Norman 8178, C. D. McPherson.

Stallion Over One, Under Two—First, Orandee 10618, Chas. E. Bunn; second, Harum Masterpiece, Geo. A. Heyl; third, Orenoco 10621, Chas. E. Bunn; fourth, Robert Dell, Geo. A. Heyl.

Stallion or Mare Foal—First, ————, John Donhowe; second, Perfection 10623, Chas. E. Bunn; third, Beauty B., Geo. A. Heyl; fourth, Laddie, Mrs. Adam Sterling.

Mare Three Years or Over—First, Kancette 8188, Chas. E. Bunn; second, Pearl 8779, Geo. A. Heyl; third, Mozelle 7075, Chas. E. Bunn; fourth, Biddy 8840, Mrs. Adam Sterling.

Mare Over Two, Under Three—First, Harum Sparkle 9086, Geo. A. Heyl; second, Nasturtium 8194, Chas. E. Bunn; third, Nettle 9508, Chas. E. Bunn; fourth, Starneyaye 8502, Mrs. Adam Sterling.

Mare Over One, Under Two—First, Black Beauty, Geo. A. Heyl; second, Mildred Harum, Geo. A. Heyl; third, Opera 10619, Chas. E. Bunn; fourth, Bluebells, 10600, W. T. Roberts.

Pony in Harness—First, ————, Geo. A. Heyl; second, Grandee 4423, Chas. E. Bunn; third, Lysander 7072, Chas. E. Bunn; fourth, Chestnut Prince 9513, Chas. E. Bunn.

Pair Ponies in Harness—First, ————, Chas. E. Bunn; second, ————, Geo. A .Heyl; third, ————, Geo. A. Heyl; fourth, ————, Chas. E. Bunn.

Four-in-Hand—First, Geo. A. Heyl; second, Chas. E. Bunn; third, H. C. Davis; fourth, John Donhowe.

Tandem Team—First, ————, Chas. E. Bunn; second, Geo. A. Heyl; third, Geo. A. Heyl; fourth, Chas. E. Bunn.

Pony Under Saddle—First, Geo. A. Heyl; second, Prince, Chas. Bachman; third, ————, C. D. McPherson; fourth, ————, C. D. McPherson.

Stallion and Four of His Get—First, Geo. A. Heyl; second, Jno. Donhowe; third, Chas. E. Bunn; fourth, B. B. Welty.

Champion Stallion, Mare or Gelding in Harness—First, Geo. A. Heyl; second, Chas. E. Bunn.

Grand Display—First, Geo. A. Heyl; second, Chas. E. Bunn; third, Chas. E. Bunn; fourth, John Donhowe.

PONIES OTHER THAN SHETLAND.

EXHIBITORS.

Thos. Bass, Mexico, Missouri; Chas. E. Bunn, Peoria, Illinois; H. C. Davis, Ames, Iowa; John Donhowe, Story City, Iowa; Geo. A. Heyl, Washington, Illinois; J. H. Kelley, Altoona, Iowa; T. J. Lee, Mitcheville, Iowa; Warren T. McDonald, Ames, Iowa; C. D. McPherson, Fairfield, Iowa; J. R. Peak & Son, Winchester, Illinois; W. T. Roberts, Ames, Iowa; Wildrose Farms, St. Charles, Illinois.

AWARDS.

JUDGE.......................PROF. W. J. KENNEDY, Ames, Iowa.

Pony in Harness—First, Czarina 1836, Chas. E. Bunn; second, Zambo 968, Chas. E. Bunn; third, New Gold 5335, Chas. E. Bunn.

Pony Under Saddle—First, Carmenuta 2007, Chas. E. Bunn; second ———, Geo. A. Heyl; third, May Apple 1837, Chas. E. Bunn.

Pair Ponies in Harness—First, New Gold and Fireman, Chas. E. Bunn; second, Juliett & Daisy, Warren T. McDonald.

MULES.

EXHIBITORS.

Loren Dunbar, Earlham, Iowa; A. L. Foster, Winterset, Iowa; T. J. Lee, Mitchellville, Iowa; C. D. McPherson, Fairfield, Iowa; James Poling, Lacona, Iowa.

AWARDS.

JUDGE.......................W. A. DOBSON, Des Moines, Iowa.

Mule Over Three, Under Four—First, T. J. Lee; second, T. J. Lee.

Mule Over Two, Under Three—First, T. J. Lee.

Mule Over One, Under Two—First, T. J. Lee; second, T. J. Lee.

Mule Colt Under One Year—First, Loren Dunbar; second, T. J. Lee.

Mine Mule Under 15 Hands—First, A. L. Foster; second, A. L. Foster.

Pair of Mules Over 2400 Pounds—First, T. J. Lee.

Pair of Mules Under 2400 Pounds—First T. J. Lee; second, A. L. Foster.

Pair of Mules Any Age or Weight—First, T. J. Lee; second, A. L. Foster.

Five Mules of Any Age—First, T J. Lee.

Champion Mule, Any Age—First, T. J. Lee; second, T. J. Lee.

CATTLE DEPARTMENT.

SUPERINTENDENT ....H. L. PIKE, Whiting, Iowa.

SHORT-HORNS.

EXHIBITORS.

J. G. Biller & Son, Harrington, Nebraska; C .S. Buckley, Holstein, Iowa; G. H. Burge, Mt. Vernon, Iowa; W. W. Brown, Amenia, South Dakota; Carpenter & Ross, Mansfield, Ohio; H. S. & W. B. Duncan, Clearfield, Iowa; W. H. Dunwoody, Minneapolis, Minnesota; Elmendorf Farm, Lexington, Kentucky; W. E. Graham, Prairie City, Iowa; E. M. Hall, Carthage, Missouri; F. W. Harding, Waukesha, Wisconsin; E. A. Hess, Council Bluffs, Iowa; Theo. Martin, Bellevue, Iowa; H. G. McMillan & Sons, Rock Rapids, Iowa; H. H. Powell & Sons, Linn Grove, Iowa; Peak & Saunders, Manilla, Iowa; Rookwood Farm, Ames, Iowa; C. A. Saunders, Manilla, Iowa; W. W. Seeley, Stuart, Iowa; T. Swearingen & Son, Hedrick, Iowa; D. Tietjen, Bellevue, Iowa; E. B. Thomas, Audubon, Iowa; T. K. Tomson & Son, Dover, Kansas; G. H. White, Emerson, Iowa, W. A. Wickersham, Melbourne, Iowa.

AWARDS.

JUDGE..............J. DEAN WILLIS, Codford, Wilshire, Eng.

Bull Three Years Old or Over—First, White Star, F. W. Harding; second, Streight Marshall 247519, D. Tietjen; third, Gallant night's Heir 292014, T. K. Tomson & Sons; fourth, Choice Knight 253397, E. A. Hess; fifth, Monarch's Viceroy 264469, Theo. Martin; sixth, Lakewood Sultan 270041, H. G. McMillan & Sons; seventh, Royal Kintore 281530, G. H. White; eighth, Knight Crusade 285677, W. W. Brown.

Bull Two Years and Under Three—First, The Captain 300451, Carpenter & Ross; second, Sultan Mine 320273, F. W. Harding; third, Village Marshall 302356, D. Tietjen; fourth, Elmendorf Marshal 323858, Elmendorf Farm; fifth, The Callant 304330, J. G. Biller & Son; sixth, Honor Bright 323756, G. H. Burge; seventh, White Archer 314581, C. S. Buckley; seventh, Secret Gloster 337880, H. S. & W. B. Duncan.

Senior Yearling Bull—First, Proud Robbin 323815, W. A. Wickersham; second, Gay Knight 316573, E. B. Thomas; fourth, Violet's Model 319474, W. H. Dunwoody; fifth, Lord Butterfly 316981, H. G. McMillan & Sons.

Junior Yearling Bull—First, Fond Memory 320270, F. W. Harding; second, True Cumberland 317602, C. A. Saunders; third, Emerson 328919, G. H. White; fourth, Hampton's King 316134, G. H. White; fifth, Master of Arts 317478, J. G. Biller & Son; sixth, Star Eclipser 337705, H. S. & W. B. Duncan; seventh, Sultan's Heir, G. H. Burge.

Senior Bull Calf—First, Mysie's Champion 335411, W. E. Graham; second, Count Avon 334946, Carpenter & Ross; third, Bapton Avalanche 334-118, W. W. Brown; fourth, Royal Cumberland 334808, C. A. Saunders; fifth, Mysie's King 335412, W. E. Graham; sixth, His Lordship, Elmendorf Farm; seventh, Counsellor's Model 336236, G. H. White; eighth, Royal Heir 334802, T. K. Tomson & Sons.

Junior Bull Calf—First, First Fashion 334971, F. W. Harding; second, Sultan Calculator 334973, F. W. Harding; third, King Cumberland 2d, H. H. Powell & Sons; fourth, Enchanter, Elmendorf Farm; fifth, Loyal Dale 334952, Carpenter & Ross; sixth, Eureka Cumberland 334804, C. A. Saunders; seventh, Contenter, D. Tietjen; eighth, King Hampton 336238, G. H. White.

Cow Three Years or Over—First, Sinnissippi Rose 2d, Elmendorf Farm; second, Imp. Ballichen Charming Maid, D. Tietjen; third, Queenston Bellona 42782, G. H. White; fourth, Archer Lilac, T. K. Tomson & Sons; fifth, Warriors Maid (20056), F. W. Harding; sixth, Beauty 23d 36523, H. G. McMillan & Sons; seventh, Victoria's Pride, Vol. 48, p. 406, Theo. Martin; eighth, Barmpton Fashion 14852, G. H. White.

Heifer Two Years and Under Three—First, Miss Marshall 2d 38834, D. Tietjen; second, Rose of Elmendorf 40614, Elmendorf Farm; third, Fleecy Cotton 40369, W. W. Brown; fourth, Lady May 81725, T. K. Tomson &

CHAMPION SHORT HORN BULL AND FIRST PRIZE BULL CALF
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Sons; fifth, Victoria Favorite 63337, Theo. Martin; sixth, Diamond Anoka 40313, G. H. Burge; seventh, Anoka Aconite 2d 40311, F. W. Harding; eighth, Leading Lady 36888, G. H. White.

Senior Yearling Heifer—First, Rose of Strathallan 69025, Elmendorf Farm; second, Her Ladyship 58002, W. W. Brown; third, White Gipsey 65195, C. A. Saunders; fourth, Calcularia Anoka, F. W. Harding; fifth, Choice Lady 81755, E. A. Hess; sixth, Gloster Anoka 63223, F. W. Harding; seventh, Village Lassie 3d 75219, D. Tietjen; eighth, Carrie Cumberland 64317, C. A. Saunders.

Junior Yearling Heifer—First, New Years Delight 59502, T. K. Tomson & Sons; second, Minnie 3d, C. A. Saunders; third, Anoka Gloster 3d, F. W. Harding; fourth, Daisy Queen 86345, T. K. Tomson & Sons; fifth, Maid Marian 82440, W. W. Brown; sixth, Happy Lass 59500, T. K. Tomson & Sons; seventh, Charming Lady 84573, G. H. White; eighth, Marshall's Queen, Elmendorf Farm.

Senior Heifer Calf—Scottish Cumberland 86367, C. A. Saunders; second, Phacelia 82441, W. W. Brown; third, Marshall Missie, D. Tietjen; fourth, Sweet Cumberland 86368, C. A. Saunders; fifth, Hampton's Duchess 84574, G. H. White; sixth, Sultan Fancy 86628, F. W. Harding; seventh, Star Duchess 86642, E. A. Hess; eighth, Ruberta Cumberland 86366, C. A. Saunders.

Junior Heifer Calf—First, Mildred Snowball 86365, C. A. Saunders; second, King's Daughter, Elmendorf Farm; third, Bonnie Cumberland 2d 86363, C. A. Saunders; fourth, Lady Cumberland 86364, C. A. Saunders;

fifth, Marshall's Bracelet, Elmendorf Farm; sixth, Missie Sultana 86625, F. W. Harding; seventh, Sultan's Aconite 86127, F. W. Harding; eighth, Miss Marshall 5th, D. Tietjen.

Senior Champion Bull—First, White Star, F. W. Harding.

Junior Champion Bull—First, Mysie's Champion, 335411, W. E. Graham.

Senior Champion Cow—First, Miss Marshall 2d 38834, D. Tietjen.

Junior Champion Heifer—First, Rose of Strathallan 69025, Elmendorf Farm.

Grand Champion Bull—White Star, F. W. Harding.

Grand Champion Cow—First, Miss Marshall 2d 38834, D. Tietjen.

Exhibitor's Herd—First, Elmendorf Farm; second, T. K. Tomson & Sons; third, D. Tietjen; fourth, E. A. Hess; fifth, G. H. White; sixth, G. H. Burge.

Breeder's Young Herd—First, C. A. Saunders; second, F. W. Harding; third, Elmendorf Farm; fourth, W. W. Brown; fifth, T. K. Tomson & Sons; sixth, G. H. White.

Calf Herd—First, C. A. Saunders; second F. W. Harding; third, C. A. Saunders; fourth, Elmendorf Farm; fifth, G. H. White; sixth, W. W. Brown.

Get of Sire—First, D. Tietjen; second, Elmendorf Farm; third, C. A. Saunders; fourth, F. W. Harding; fifth, W. W. Brown; sixth, G. H. White.

Produce of Cow—First, Elmendorf Farm; second, W. W. Brown; third, F. W. Harding; fourth, D. Tietjen; fifth, G. H. Burge; sixth, G. H. White.

ASSOCIATION SPECIALS.

Iowa Bull Three Years or Over—First, Streight Marshall 247519, D. Tietjen; second, Choice Knight 253397, E. A. Hess; third, Monarch's Viceroy 264469, Theo. Martin; fourth, Lakewood Sultan 270041, H. G. McMillan & Sons; fifth, Royal Kintore 281530, G. H. White.

Iowa Bull Two Years and Under Three—First, Village Marshall 302356, D. Tietjen; second, Honor Bright 323756, G. H. Burge; third, White Archer 314581, C. S. Buckley; fourth, Secret Gloster 337880, H. S. & W. B. Duncan; fifth, Butterfly Royal 300161, H. G. McMillan & Sons.

Iowa Senior Yearling Bull—First, Proud Robbin 323815, W. A. Wickersham; second, Gay Knight 316573, E. B. Thomas; third, British Knight 322593, Rookwood Farm; fourth, Lord Butterfly 316981, H. G. McMillan & Sons.

Iowa Junior Yearling Bull—First, True Cumberland 317602, C. A. Saunders; second, Emerson 328919, G. H. White; third, Hampton's King 316134, G. H. White; fourth, Star Eclipser 337705, H. S. & W. H. Duncan; fifth, Sultan's Heir, G. H. Burge.

Iowa Senior Bull Calf—First, Mysie's Champion 335411, W. E. Graham; second, Royal Cumberland 334808, C. A. Saunders; third, Mysie's King 335412, W. E. Graham; fourth, Counsellor's Model 336236, G. H. White; fifth, Czar Cumberland, T. Swearingen & Sons; sixth, Cherry Knight 334996, E. A. Hess; seventh, Giltspur Knight 334997, E. A. Hess.

Iowa Junior Bull Calf.—First, King Cumberland 2d, H. H. Powell &

Sons; second, Eureka Cumberland 334806, C. A. Saunders; third, Contenter, D. Tietjen; fourth, King Hampton 336238, G. H. White; fifth, Our Choice 33150, H. G. McMillan & Sons; sixth, Royal Victor, Theo Martin; seventh, Broadhooks Buster, T. Swearingen & Sons.

Iowa Cow Three Years Over—First, Imp. Ballichen Charming Maid, D. Tietjen; second, Queenston Bellona 42782, G. H. White; third, Beauty 23d 36523, H. G. McMillan & Sons; fourth, Victoria's Pride, Vol. 48, P. 406, Theo. Martin; fifth, Brampton Fashion 14853, G. H. White; sixth, Florella, Vol. 68, G. H. Burge.

Iowa Heifer Two Years and Under Three—First, Miss Marshall 2d 38834, D. Tietjen; second, Victoria Favorite 63337, Theo. Martin; third, Diamond Anoka 40313, G. H. Burge; fourth, Leading Lady 36888, G. H. White; fifth, Alexandria 2d 47813, H. G. McMillan & Sons; sixth, Orange Blossom Belle 48136, E. A. Hess; seventh, Fanny Lovet, T. Swearingen & Son.

Iowa Senior Yearling Heifer—First, White Gipsey 65195, C. A. Saunders; second, Choice Lady 81755, E. A. Hess; third, Village Lassie 3d 75219, D. Tietjen; fourth, Carrie Cumberland 64317, C. A. Saunders; fifth, Pinegrove Butterfly 2d 62447, H. G. McMillan & Sons; sixth, Money's Lady, 81755, G. H. Burge; seventh, Broadhook's Dutchess, T. Swearingen & Son.

Iowa Junior Yearling Heifer—First, Minnie 3d, C. A. Saunders; second, Charming Lady 84573, G. H. White; third, Rose of Autumn 24th 59051, Theo Martin; fourth, Lady M 84575, G. H. White; fifth, Sentiment 86889, H. S. & W. B. Duncan; sixth, Dandy 61372, G. H. Burge; seventh, H. G. McMillan & Sons.

Iowa Senior Heifer Calf—First, Scottish Cumberland 86367, C. A. Saunders; second, Marshall Missie, D. Tietjen; third, Sweet Cumberland 86368, C. A. Saunders; fourth, Hampton's Duchess 84574, G. H. White; fifth, Star Duchess 86642, E. A. Hess; sixth, Ruberta Cumberland 86366, C. A. Saunders; seventh, Sweet Cumberland 2d 86369, C. A. Saunders.

Iowa Junior Heifer Calf—First, Mildred Snowball 86365, C. A. Saunders; second, Bonnie Cumberland 2d 86363, C. A. Saunders; third, Lady Cumberland 86364, C. A. Saunders; fourth, Miss Marshall 5th, D. Tietjen; fifth, Lena Lady 84576, G. H. White; sixth, Bonnie Cumberland 2d 86363, C. A. Saunders; seventh, Morning Butterfly 81241, H. G. McMillan & Sons.

Iowa Senior Champion Bull—First, D. Tietjen.

Iowa Junior Champion Bull—Mysie's Champion 335411, W. E. Graham.

Iowa Senior Champion Cow—First, Miss Marshall 2d 38834, D. Tietjen.

Iowa Junior Champion Heifer—First, Scottish Cumberland 86367, C. A. Saunders.

Iowa Grand Champion Bull—First, Village Marshall 302356, D. Tietjen.

Iowa Grand Champion Cow—First, Miss Marshall 2d 38834, D. Tietjen.

Exhibitor's Herd—First, D. Tietjen; second, E. A. Hess; third, Elmendorf Farm; fourth, W. W. Brown; fifth, T. K. Tomson; sixth, G. H. White.

Iowa Breeder's Young Herd—First, C. A. Saunders; second, G. H. White; third, H. G. McMillan & Son.

Iowa Calf Herd—First, C. A. Saunders; second, C. A. Saunders; third, G. H. White; fourth, C. A. Saunders; fifth, D. Tietjen; sixth, H. G. McMillan & Sons.

Get of Sire—First, D. Tietjen; second, C. A. Saunders; third, G. H. White; fourth, C. A. Saunders; fifth, G. H. Burge; sixth, C. A. Saunders.

Iowa Produce of Cow—First, D. Tietjen; second, G. H. Burge; third, G. H. White; fourth, C. A. Saunders; fifth, H. G. McMillan; sixth, Theo. Martin.

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IOWA SPECIALS.

Bull Three Years or Over—First, Choice Knight 253397, E. A. Hess; second, Monarch's Viceroy 264469, Theo. Martin; third, Lakewood Sultan 270041, H. G. McMillan & Sons; fourth, Royal Kintore 281530, G. H. White.

Bull Two Years and Under Three—First, Village Marshall 302356, D. Tietjen; second, Honor Bright 323756, G. H. Burge; third, White Archer 314581, C. S. Buckley; fourth, Secret Gloster 337880, H. S. & W. B. Duncan; fifth, Butterfly Royal 300161, H. G. McMillan & Sons.

Senior Yearling Bull—First, British Knight 322593, Rookwood Farm; second, Lord Butterfly 316981, H. G. McMillan.

Junior Yearling Bull—First, Emerson 328919, G. H. White; second, Hampton's King 316134, G. H. White; third, Star Eclipser 337705, H. S. & W. B. Duncan; fourth, Sultan's Heir, G. H. Burge.

Senior Bull Calf—First, Royal Cumberland 334808, C. A. Saunders; second, Mysie's King 335412, W. E. Graham; third, Counsellor's Model 336239, G. H. White; fourth, Czar Cumberland, T. Swearingen & Son; fifth, Cherry Knight 334996, E. A. Hess.

Junior Bull Calf—First, King Cumberland 2d, H. H. Powell & Sons; second, Eureka Cumberland 334806, C. A. Saunders; third, Contenter, D. Tietjen; fourth, King Hampton 336238, G. H. White; fifth, Our Choice 333150, H. G. McMillan & Sons.

Cow Three Years or Over—First, Queenston Bellona 42782, G. H. White; second, Beauty 23d 36523, H. G. McMillan & Sons; third, Victoria's Bride, Vol. 48, Theo. Martin; fourth, Barmpton Fashion 14852, G. H. White; fifth, Florella, Vol. 68, G. H. Burge.

Heifer Two Years and Under Three—First, Victoria Favorite 63337, Theo. Martin; second, Diamond Anoka 40313, G. H. Burge; third, Leading Lady 36888, G. H. White; fourth, Alexanderia 2d 47813, H. C. McMillan & Sons; fifth, Orange Blossom Belle 48136, E. A. Hess.

Senior Yearling Heifer—First, White Gipsey 65195, C. A. Saunders; second, Choice Lady 81755, E. A. Hess; third, Village Lassie 3d 75219, D. Tietjen; fourth, Carrie Cumberland 64317, C. A. Saunders; fifth, Pinegrove Butterfly 2d 62447, H. G. McMillan & Sons.

Junior Yearling Heifer—First, Charming Lady 84573, G. H. White; second, Rose of Autumn 24th 59051, Theo Martin; third, Lady M 84575, G. H. White; fourth, Sentiment 86889, H. S. & W. B. Duncan; fifth, Dandy 61372, G. H. Burge.

Senior Heifer Calf—First, Marshall Missie, D. Tietjen; second, Sweet Cumberland 86368, C. A. Saunders; third, Hampton's Duchess 84574, G. H. White; fourth, Star Duchess 86642, E. A. Hess; fifth, Ruberta Cumberland 86366, C. A. Saunders.

Junior Heifer Calf—First, Bonnie Cumberland 86362, C. A. Saunders; second, Lady Cumberland 86364, C. A. Saunders; third, Miss Marshall 5th, D. Tietjen; fourth, Lena Lady 84576, G. H. White; fifth, Bonnie Cumberland 86362, C. A. Saunders.

Senior Champion Bull—First, D. Tietjen.

Junior Champion Bull—First, Emerson 328919, G. H. White.

Senior Champion Cow—First, Queenston Bellona 42782, G. H. White.

Junior Champion Cow—First, Marshall Missie, D. Tietjen.

Grand Champion Bull—First, Village Marshall 302356, D. Tietjen.

Exhibitor's Herd—First, D. Tietjen; second, E. A. Hess; third, G. H. White; fourth, G. H. Burge.

Breeder's Young Herd—First, G. H. White; second, H. G. McMillan & Sons.

Calf Herd—First, C. A. Saunders; second, G. H. White; third, C. A. Saunders; fourth, D. Tietjen.

Get of Sire—First, C. A. Saunders; second, G. H. White; third, C. A. Saunders; fourth, G. H. Burge.

Produce of Cow—First, D. Tietjen; second, G. H. Burge; third, G. H. White; fourth, C. A. Saunders.

HEREFORDS.

EXHIBITORS.

Wm. Andrews & Sons, Morse, Iowa; J. O. Bryant, Savannah, Missouri; Sidney Brock, Lake Geneva, Wisconsin; Jesse Engle & Sons, Sheridan, Wyoming; O. S. Gibbons & Sons, Harris, Missouri; Robt. Hazlett, El Dorado, Kansas; Warren T. McCray, Kentland, Indiana; Makin Brothers, Grandview, Mo.; John E. Painter, Roggen, Colorado; Cyrus A. Tow, Norway, Iowa; W. S. Van Natta & Sons, Fowler, Indiana; A. L. Weston, Edgewater, Colorado; J. W. Wyant, Blythedale, Missouri.

AWARDS.

JUDGE ....R. J. KINZER, Manhattan, Kas.

Bull Three Years or Over—First, Curtiss 25436, J. O. Bryant; second, Prime Lad 9th 213963, W. S. Van Natta & Son; third, Principal 6th 273-293, Cyrus A. Tow; fourth, Heir Apparent 268764, John E. Painter; fifth, Peter Parley 266398, Warren T. McGray; sixth, General G 261924, O. S. Gibbons & Son.

Bull Two Years and Under Three—First, Repeater 289598, O. Harris & Sons; second, Paragon 12th 299166, Makin Bros.; third, Prime Lad 42d 289284, W. S. Van Natta & Son; fourth, Echo Grove 306948, Wm. Andrews & Sons; fifth, Young Albany 290216, Cyrus A. Tow.

Senior Yearling Bull—First, Gay Lad 6th 316936, O. Harris & Sons; second, Paragon 21st 324449, Makin Bros.; third, Beau Real 15th 317645, Warren T. McCray; fourth, Norway Chief 315529, Cyrus A. Tow; fifth, Princeps 5th 334596, Jno. E. Painter; sixth, Onward Jr. 308330, O. S. Gibbons & Son.

Junior Yearling Bull—First, Discounter 345348, S. L. Brock; second, Prince Lad 10th 324668, W. S. Van Natta; third, Fairfax 16th 316931, Warren T. McCray; fourth, Columbus B. 7th 335456, J. O. Bryant; fifth, Heir Presumptive 335716, Jno. E. Painter; sixth, Polled Ito 322148, Wm. Andrews & Son; seventh, Columbus B. 9th 335458, J. O. Bryant.

Senior Bull Calf—First, Donal Lad 3d 344663, W. S. Van Natta & Son; second, Financier 2d 341212, S. L. Brock; third, Corrector Fairfax 332653, Warren T. McCray; fourth, Harris Prince 172d 335582, O. Harris & Son; fifth, Paragon 28th 348995, Makin Bros.; sixth, Gladstone 340293, O. S. Gibbons & Son; seventh, Mariner 348405, Jno. E. Painter.

Junior Bull Calf—First, Victor Fairfax 344301, Warren T. McCray; second, Donald Lad 7th 348415, W. S. Van Natta; third, Authority 342029, Wm. Andrews & Sons; fourth, Harris Prince 185th 342321, O. Harris & Sons; fifth, Albany's Lad 344758, Cyrus A. Tow; seventh, Proud Princeps 348409, John E. Painter.

Cow Three Years or Over—First, Lady Fairfax 4th 265180, Warren T. McCray; second, Margaret 234336, W. S. Van Natta & Son; third, Miss Filler 2d 230514, O. Harris & Sons; fourth, Miss Princeps 8th 234588, John E. Painter; fifth, Princess 2d 264207, Cyrus A. Tow; sixth, Priscilla 204-713, O. S. Gibbons & Son; seventh, Missouri Queen 2d 275098, John E. Painter.

FIRST PRIZE HEREFORDS
Iowa State Fair and Exposition, 1910

Heifer Two Years and Under Three—First, Princess 16th 288350, O. Harris & Son; second, Forget-me-not 299111, Makin Bros; third, Lady Fairfax 9th 294557, Warren T. McCray; fourth, Kathrine 289050, J. O. Bryant; fifth, Mercedes 283217, Warren T. McCray; sixth, Queen Bess 295544, John E. Painter; seventh, Harris' Princess 60th 287286, O. Harris

Senior Yearling Heifer—First, Cora 2d 324644, W. S. Van Natta & Son; second, Goodness 2d 324445, Makin Bros.; third, Harris' Princess 120th 312371, O. Harris & Sons; fourth, Lady Lastly 316219, S. L. Brock; fifth, Lady Fairfax 12th, Warren T. McCray; sixth, Fuchsia 3d 324442, Makin Bros.; seventh, Cuba 7th 317379, J. O. Bryant.

Junior Yearling Heifer—First, Harris' Princess 125th 320357, O. Harris & Sons; second, Iva 3d 324647, W. S. Van Natta & Son; third, Disturber's Lassie 3d 325350, S. L. Brock; fourth, Disturber's Queen 2d 325351, S. L. Brock; fifth, Lady Curgis 317387, J. O. Bryant; sixth, Gay Lass 5th 316-953, Warren T. McCray; seventh, Katie Shadeland 3d 317385, J. O. Bryant.

Senior Heifer Calf—First, Donald Lass 4th 344666, W. S. Van Natta & Son; second, Harris' Princess 168th 335604, O. Harris & Sons; third, Clematis 3d 348990, Makin Bros.; fourth, Miss Amabel 341213, S. L. Brock; fifth, Daisy Fairfax 332654, Warren T. McCray; sixth, Carnette 340292, O. S. Gibbons & Son; seventh, Stella 344679, W. S. Van Natta & Son.

Junior Heifer Calf—First, Harris' Princess 184th 342334, O. Harris & Son; second, Harris' Princess 185th 342335, O. Harris & Sons; third, Taletha Donald 344298, J. O. Bryant; fourth, Pansy Belle 3d 346552, O. S.

Gibbons & Son; fifth, Moonbeam 348407, John E. Painter; sixth, Pretty Lass 2d 348417, W. S. Van Natta & Son; seventh, Katie Shadeland 4th 348742, J. C. Bryant.

Senior Champion Bull—First, Repeater 289598, O. Harris & Sons.

Junior Champion Bull—First, Gay Lad 6th 316936, O. Harris & Sons.

Senior Champion Cow—First, Lady Fairfax 4th 265180, Warren T. McCray.

Junior Champion Cow—First, Donald Lass 4th 344666, W. S. Van Natta.

Grand Champion Bull—First, Gay Lad 6th 316936, O. Harris & Sons.

Grand Champion Cow—First, Lady Fairfax 4th 265180, Warren T. McCray.

Exhibitor's Herd—First, O. Harris & Sons; second, W. S. Van Natta & Son; third, Warren T. McCray; fourth, Makin Bros.; fifth, John E. Painter; sixth, J. O. Bryant; seventh, Cyrus A. Tow.

Breeder's Young Herd—First, O. Harris & Sons; second, S. L. Brock; third, W. S. Van Natta & Son; fourth, Makin Bros.; fifth, John E. Painter; sixth, J. O. Bryant; seventh, Wm. Andrews.

Calf Herd—First, W. S. Van Natta & Sons; second, Warren T. McCray; third, S. L. Brock; fourth, J. O. Bryant; fifth, Makin Bros.; sixth, O. Harris & Sons; seventh, O. S. Gibbons & Son.

Get of Sire—First, Warren T. McCray; second, W. S. Van Natta & Son; third, Makin Bros.; fourth, S. L. Brock; fifth, O. Harris & Sons; sixth, W. S. Van Natta & Son; seventh, J. O. Bryant.

Produce of Cow—First, Warren T. McCray; second, W. S. Van Natta & Son; third, J. O. Bryant; fourth, Makin Bros.; fifth, W. S. Van Natta & Son; sixth, O. Harris & Sons; seventh, John E. Painter.

IOWA SPECIALS.

Bull Three Years or Over—First, Principal 6th 273293, Cyrus A. Tow; second, General G. 261924, O. S. Gibbons & Son.

Bull Two Years and Under Three—First, Echo Grove 306948, Wm. Andrews & Sons; second, Young Albany 290216, Cyrus A. Tow.

Senior Yearling Bull—First, Norway Chief 315529, Cyrus A. Tow; second, Onward Jr. 308330, O. S. Gibbons & Son.

Junior Yearling Bull—First, Polled Ito 322148, Wm. Andrews & Son; second, San Rojas 321081, Wm. Andrews & Sons.

Senior Bull Calf—First, Gladstone 340293, O. S. Gibbons & Son; second, Fair View Bum 336939, Cyrus A. Tow.

Junior Bull Calf—First, Authority 342029, Wm. Andrews; second, Albany's Lad 344758, Cyrus A. Tow; third, Bonnie Brae 28th 342539, Cyrus A. Tow; fourth, Good Lad 343996, O. S. Gibbons & Son.

Cow Three Years or Over—First, Princess 2d 264207, Cyrus A. Tow; second, Priscilla 204713, O. S. Gibbons & Son; third, Portia 233771, Wm. Andrews & Sons; fourth, Red Ruby 263880, Cyrus A. Tow.

Heifer Two Years and Under Three—First, Water Pearl 296954, Cyrus A. Tow; second, Spray 289600, Cyrus A. Tow; third, Pansy Bell 2d 292652, O. S. Gibbons & Son; fourth, Melba 288777, Wm. Andrews & Son.

Senior Yearling Heifer—First, Jersey Lady 313878, Cyrus A. Tow; second, Fairview Miss, Cyrus A. Tow; third, Lady Winifred 315784, O. S. Gibbons & Son; fourth, Lady Brummel 309147, Wm. Andrews & Sons.

Junior Yearling Heifer—First, Gwendolyn 323006, O. S. Gibbons & Son; second, Allene 321076, Wm. Andrews & Sons; third, Princeps Maiden 323658, O. S. Gibbons & Son; fourth, Lady May 321078, Wm. Andrews & Sons; fifth, Lady March On 323008, O. S. Gibbons & Son.

Senior Heifer Calf—First, Carnette 340292, O. S. Gibbons & Son; second, Fairview Queen 336971, Cyrus A. Tow; third, Clover Blossom 342-033; fourth, Fairview Beauty 336968, Cyrus A. Tow; fifth, Geneva 342035, Wm. Andrews & Sons.

Junior Heifer Calf—First, Pansy Belle 3d 346552, O. S. Gibbons & Son; second, Charlotte 342032, Wm. Andrews & Son; third, Lenora 344765, Cyrus A. Tow; fourth, Sweetness 346554, O. S. Gibbons & Son; fifth, Woodland Lass 344765, Cyrus A. Tow.

Senior Champion Bull—First, Principal 6th 273293, Cyrus A. Tow.

Junior Champion Bull—First, Authority 342029, Wm. Andrews & Sons.

Senior Champion Cow—First, Princess 2d 264204, Cyrus A. Tow.

Junior Champion Cow—Pansy Belle 3d 346552, O. S. Gibbons & Son.

Grand Champion Bull—First, Principal 6th 273293, Cyrus A. Tow.

Grand Champion Cow—First, Princess 3d 264207, Cyrus A. Tow.

Exhibitor's Herd—First, Cyrus A. Tow; second, O. S. Gibbons & Son; third, Wm. Andrews & Sons.

Breeders' Young Herd—First, Wm. Andrews; second, O. S. Gibbons & Son.

Calf Herd—First, O. S. Gibbons & Son; second, Wm. Andrews & Sons; third, Cyrus A. Tow; fourth, Cyrus A. Tow.

Get of Sire—First, O. S. Gibbons & Son; second, Cyrus A. Tow; third, Wm. Andrews & Sons; fourth, Cyrus A. Tow.

Produce of Cow—First, Cyrus A. Tow; second, O. S. Gibbons & Son; third, O. S. Gibbons & Son; fourth, O. S. Gibbons & Son.

ABERDEEN-ANGUS.

EXHIBITORS.

J. V. Arney, Leon, Iowa; R. M. Anderson & Sons, Newell, Iowa; O. V. Battles, Maquoketa, Iowa; A. C. Binnie, Alta, Iowa; O. E. Briney, Marion, Iowa; Escher & Ryan, Irwin, Iowa; J. R. Horsewell, Estherville, Iowa; M. D. Korns, Hartwick, Iowa; W. A. McHenry, Denison, Iowa; C. D. McPherson, Fairfield, Iowa; W. J. Miller, Newton, Iowa.

AWARDS.

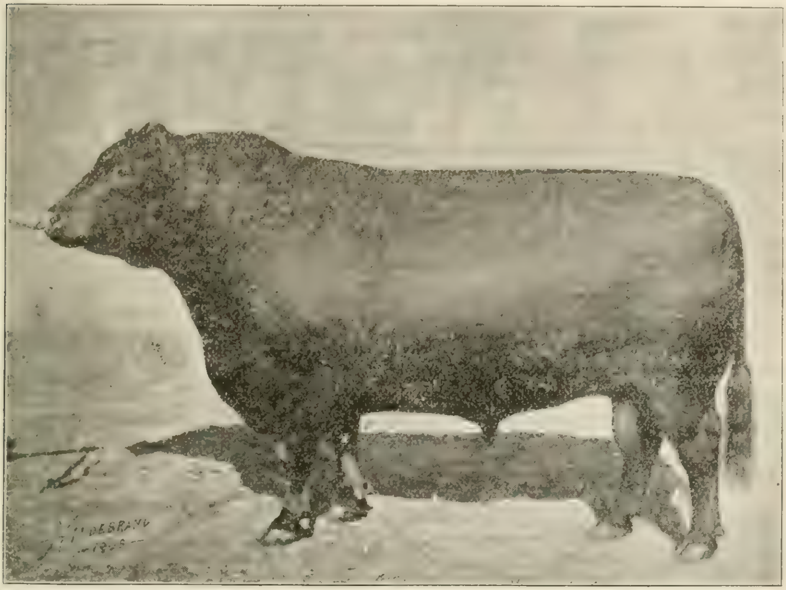
JUDGE........................O. E. BRADFUTE, Xenia, Ohio.

Bull Three Years or Over—First, Oakville Quiet Lad 109220, Otto V. Battles; second, Ernest 91016, W. J. Miller; third, Peter Stirling 113444, A. C. Binnie; fourth, Black Ivanhoe 76888, R. M. Anderson & Son; fifth, Long-grove Pride 114086, O. E. Briney.

Bull Two Years and Under Three—First, Quality Prince 117284, W. A. McHenry; second, Prism 116627, W. A. McHenry; third, Thickset Blackbird 115895, Otto V. Battles; fourth, Walnut Dell Eric 122564, M. D. Korns.

Senior Yearling Bull—First, Heather Bloom King 130725, M. D. Korns; second, Black Ensign 129031, J. R. Horsewell.

Junior Yearling Bull—First, St. Blaise 130837, Otto V. Battles; second, Queen's Clansman 3d 129098, W. A. McHenry; third, Proud Elmar 2d 125898, A. C. Binnie; fourth, Jade Royal 130570, R. M. Anderson; fifth Heather Twain 132705, W. J. Miller; sixth, Blackbird Ned 132061, O. E. Briney.



CHAMPION ANGUS BULL
Iowa State Fair and Exposition, 1910

Senior Bull Calf—First, Protine 138372, W. A. McHenry; second, Black Elmar, A. C. Binnie; third, Kenwood Echo 132710, W. J. Miller; fourth, Ebony of A 135657, J. V. Arney; fifth, Even Royal 139635, R. M. Anderson & Sons.

Junior Bull Calf—First, Peter Pan, A. C. Binnie; second, Black King of Rosemere 137159, Otto V. Battles; third, Junius A 129637, R. M. Anderson & Sons; fourth, Dale of Rosemer, Otto V. Battles; fifth, Thicksett of Rosemere 137156, Otto V. Battles; sixth, Snowflakes Kilbourn, W. J. Miller.

Cow Three Years or Over—First, Barbara McHenry 24th 104144, W. A. McHenry; second, Gay Lawn Bonnie Lass 100608, Otto V. Battles; third, Queen Milly of Sun Dance 108658, M. D. Korns; fourth, Snow

Flake's Queen 2d 106543, W. J. Miller; fifth, Ethelda D. 95185, W. J. Miller; sixth, Pride 11th of Woodlawn 48820, R. M. Anderson; seventh, Proud Preston Lassie 84111, A. C. Binnie; eighth, Idas Beauty 2d 79129, O. E. Briney.

Heifer Two Years and Under Three—First, Black Eileen 115897, Otto V. Battles; second, Pride McHenry 73d 116642, W. A. McHenry; third, Pride of Alta 10th 118155, A. C. Binnie; fourth, Pride McHenry 72d 116635, W. A. McHenry; fifth, Metz Beauty 7th 118746, W. J. Miller; sixth, Woodlawn May 117359, M. D. Korns; seventh, Queen Mela Royal 3d 121353, R. M. Anderson & Sons; eighth, Alfalfa Blackbird 5th 117864, O. E. Briney.

Senor Yearling Heifer—First, Barbara Woodson 129611, W. J. Miller; second, Walnut Grove Tura 126976, M. D. Korns; third, Evan Lass 8th 129492, A. C. Binnie; fourth, Metz Black Bird 4th 128806, W. J. Miller; fifth, Blackbird McHenry 79th 125458, W. A. McHenry; sixth, Rosmere Blackbird Lass 128966, Otto V. Battles; seventh, Entangle of Arndale 121562, J. V. Arney; eighth, Alicia of Hartwick 128490, M. D. Korns.

Junior Yearling Heifer—First, Pride of Alta 12th 129497, W. A. McHenry; second, Glenmere Irene 120544, Otto V. Battles; third, Jilt 56th 130577, R. M. Anderson; fourth, Eileen of Alta 129498, A. C. Binnie; fifth, Walnut Grove Queenette 12822, M. D. Korns; sixth, Evelyn Blackbird 128968, Otto V. Battles; seventh, Long Grove B. B. Lady, Otto V. Battles; eighth, Pride McHenry 82d 125484, W. A. McHenry.

Senior Heifer Calf—First, Blackcap McHenry 84th 138378, W. A. McHenry; second, Queen of Rosemere 131206, Otto V. Battles; third, Abbess of Alta, A. C. Binnie; fourth, Blackbird of Woodlawn 16th, M. D. Korns; fifth, Metz Regia 8th, W. J. Miller; sixth, Queen Woodlawn, M. D. Korns; seventh, Thickset Pride 3d 137153, Otto V. Battles; eighth, Queen of Leon 2d 135656, J. V. Arney.

Junior Heifer Calf—First, Eileen of Alta 2d, A. C. Binnie; second, Barbara of Rosemere 2d 137158, Otto V. Battles; third, Marion Queen, O. E. Briney; fourth, Blackcap McHenry 88th 138394, W. A. McHenry; fifth, Bonnie of Rosemere, Otto V. Battles; sixth, Rose of Rosemere 317157, Otto V. Battles; seventh, Metz Beauty 8th, W. J. Miller; eighth, Pride of Elchies 18th, 138638, R. M. Anderson & Sons.

Senior Champion Bull—First, Oakville Quiet Lad 109220, Otto V. Battles.

Junior Champion Bull—First, Protine 138372, W. A. McHenry.

Senior Champion Cow—First, Barbara McHenry 24th 104144, W. A. McHenry.

Junior Champion Cow—First, Blackcap McHenry 87th 138388, W. A. McHenry.

Grand Champion Bull—First, Oakville Quiet Lad 109220, Otto V. Battles.

Grand Champion Cow—First, Barbara McHenry 24th 104144, W. A. McHenry.

Exhibitor's Herd—First, W. A. McHenry; second, Otto V. Battles;

third, W. J. Miller; fourth, M. D. Korns; fifth, A. C. Binnie; sixth, R. M. Anderson & Sons; seventh, O. E. Briney.

Breeder's Young Herd—First, W. A. McHenry; second, Otto V. Battles; third, A. C. Binnie; fourth, W. J. Miller; fifth, R. M. Anderson & Sons; sixth, J. V. Arney; seventh, O. E. Briney.

Calf Herd First, W. A. McHenry; second, A. C. Binnie; third, Otto V. Battles; fourth, R. M. Anderson & Sons; fifth, W. J. Miller; sixth, J. V. Arney.

Get of Sire—First, W. A. McHenry; second, Otto V. Battles; third, A. C. Binnie;, fourth, A. C. Binnie; fifth, R. M. Anderson & Sons; sixth, W. J. Miller; seventh, J. V. Arney.

Produce of Cow—First, A. C. Binnie; second, W. A. McHenry; third, Otto V. Battles; fourth, A. C. Binnie; fifth, R. M. Anderson & Sons; sixth, W. J. Miller; seventh, A. C. Binnie.

GALLOWAY.

EXHIBITORS.

J. E. Bales & Son, Stockport, Iowa; C. S. Hechtner, Chariton, Iowa; C. D. McPherson, Fairfield, Iowa; Straub Bros., Avoca, Nebraska.

AWARDS.

JUDGE........................E. T. DAVIS, Iowa City, Iowa.

Bull Three Years or Over—First, Captain 4th of Tarbreoch 30933 (9701), Straub Bros.; second, Douglass of Meadowlawn 30618, J. E. Bales & Son.

Bull Two Years and Under Three—First, Stanley of Maples 322544, C. S. Hechtner; second, Eloquent 35186, Straub Bros.; third, Evaline Sampson 32255, C. S. Hechtner.

Bull One Year and Under Two—First, Marquis 35184, Straub Bros.; second, Vinclas Favorite 33979, C. S. Hechtner.

Senior Bull Calf—First, Choicemaster 33185, Straub Bros.

Junior Bull Calf—First, Fearnot of Maples 35166, C. S. Hechtner; second, Royal Douglass, J. E. Bales & Son; third, Viscount 2d 35181, Straub Bros.

Cow Three Years or Over—First, Floss 2d 28741, C. S. Hechtner; second, Sadie of Meadow Lawn 26834, Straub Bros.; third, Lily May 30803, J. E. Bales & Son; fourth, Belle Standard 29121, Straub Bros.

Heifer Two Years and Under Three—First, Merry Maid 32266, Straub Bros.; second, Bessie of Maples 32252, C. S. Hechtner; third, Meadow Lawn Cora 32203, J. E. Bales & Son; fourth, Lady Standard 32770, Straub Bros.; fifth, Florence of Meadow Lawn 32316, C. S. Hechtner.

Senior Yearling Heifer—First, Dolly Dimple 2d 33957, Straub Bros.; second, Careful of Maples 33976, C. S. Hechtner; third, Elizabeth 34065, J. E. Bales & Son.

Junior Yearling Heifer—First, Ladylike 34014, Straub Bros.; second, Miss Stanley 33977, C. S. Hechtner; third, Lady Claire 5th, 34064, J. E. Bales & Son; fourth, Lady Love of Maples 33980, C. S. Hechtner; fifth, Lady Irving 34056, J. E. Bales & Son.

Senior Heifer Calf—First, Clara of Maples 2d 35169, C. S. Hechtner; second, Daisy Dimple 35187, Straub Bros.; third, Nellie Douglass, J. E. Bales & Son.

Junior Heifer Calf—First, Maid of Honor 35183, Straub Bros.; second, Douglass Maid, J. E. Bales & Son; third, Nellie of Maples 35168, C. S. Hechtner; fourth, Queen Douglass, J. E. Bales & Son.

Senior Champion Bull—First, Captain 4th of Tarbreoch 30933 (9701), Straub Bros.

Junior Champion Bull—First, Fearnot of Maples 35166, C. S. Hechtner.

Senior Champion Cow—First, Floss 2d 28741, C. S. Hechtner.

Junior Champion Heifer—First, Ladylike 34014, Straub Bros.

Grand Champion Bull—First, Captain 4th of Tarbreoch 30933 (9701), Straub Bros.

Grand Champion Cow—First, Ladylike 34014, Straub Bros.

Exhibitor's Herd—First, Straub Bros.; second, C. S. Hechtner; third, J. E. Bales & Son; fourth, Straub Bros.

Breeder's Young Herd—First, Straub Bros.; second, C. S. Hechtner; third, J. E. Bales & Son.

Get of Sire—First, C. S. Heihtner; second, Straub Bros.; third, C. S. Hechtner; fourth, J. E. Bales & Son; fifth, Straub Bros.

Produce of Cow—First, Straub Bros.; second, C. S. Hechtner; third, C. S. Hechtner; fourth, Straub Bros.; fifth, J. E. Bales & Son.

POLLED DURHAM.

EXHIBITORS.

Wm. Barrans, Lenox, Iowa; Jacob Marti, Lansing, Iowa; W. H. Miller & Sons, Mulberry, Indiana; W. W. Seeley, Stuart, Iowa; Walker Bros., Ord, Nebraska; J. J. Williams & Son, Grandview, Iowa.

AWARDS.

JUDGE......................T. F. FLYNN, Des Moines, Iowa.

Bull Three Years or Over—First, Marshal of the Mound 5765, W. H. Miller & Sons; second, Sugar Hill Marshall 5229, J. J. Williams & Son; third, Cupbearer's Prize 6468, Walker Bros.

Bull Two Years and Under Three—First, Grand Rival 6709, Wm. Barrans; second, Lord Baron 7050, Jacob Marti.

Bull One Year and Under Two—First, Marshal's Best, W. H. Miller & Sons; second, Royal Hero 7636, Walker Bros.; third, Standard Bearer 7915, Walker Bros.; fourth, Plumed Rustler 7650, Jacob Marti.

Senior Bull Calf—First, Sugar Mount Tip, W. H. Miller & Sons; second, Spartacus 7917, Walker Bros.; third, Marshal Golddust, W. H. Miller & Sons; fourth, Silken Marshal, J. J. Williams & Son; fifth, Red Rival 7918, Walker Bros.

Junior Bull Calf—First, Marshall Royal, J. J. Williams & Son; second, MacDuff, Walker Bros.

Cow Three Years or Over—First, Buttonwood Jenny Lind 4th, W. H. Miller & Sons; second, Queen Mabel, Walker Bros.; third, Roan Belle, Walker Bros.; fourth, Royal Queen 28318, J. J. Williams & Son; fifth, Plumed Lady, Jacob Marti.

Heifer Two Years and Under Three—First, Lady Marshal, W. H. Miller & Son; second, Bell Boy's Rose, Jacob Marti; third, Rosebud, Walker Bros.; fourth, Wistful 51128, J. J. Williams & Son.

Senior Yearling Heifer—First, Bell Boys Cleopatra, Jacob Marti; second, Nora Marshal, W. H. Miller & Son; third, Hero's Lady, Walker Bros.

Junior Yearling Heifer—First, King's Mary Anne, W. H. Miller & Sons; second, Bonnie Belle, Walker Bros.; third, Scottish Bluebell 3d, J. J. Williams & Son.

Senior Heifer Calf—First, Bud's Mist, W. H. Miller & Sons; second, Queenly, W. H. Miller & Sons; third, Wistful 2d, J. J. Williams & Son; fourth, Cleopatra Baroness, Jacob Marti; fifth, Fay, Walker Bros.

Junior Champion Bull—First, Marshal's Best, W. H. Miller & Sons.

Senior Champion Cow—First, Lady Marshal, W. H. Miller & Sons.

Junior Champion Heifer—First, Bell Boy's Cleopatra, Jacob Marti.

Grand Champion Bull—First, Marshal of the Mound 5765, W. H. Miller & Sons.

Grand Champion Cow—First, Lady Marshal, W. H. Miller & Sons.

Exhibitor's Herd—First, W. H. Miller & Sons; second, Walker Bros.; third, Jacob Marti; fourth, J. J. Williams & Son.

Breeder's Young Herd—First, W. H. Miller & Sons.

Get of Sire—First, W. H. Miller & Sons; second, J. J. Williams & Son; third, Walker Bros.

Produce of Cow—First, W. H. Miller & Sons; second, Jacob Marti; third, J. J. Williams & Son; fourth, Walker Bros.; fifth, Jacob Marti.

RED POLLED.

EXHIBITORS.

Frank Davis & Sons, Holbrook, Nebraska; W. S. Hill, Alexandria, S. Dak.

AWARDS.

JUDGE..........................J. W. MARTIN, Gotham, Wis.

Bull Three Years or Over—First, Rutland 16053, W. S. Hill; second, Creme, 13018, Frank Davis & Sons; third, Teddy's Best 17603, Frank Davis & Sons.

Bull One Year and Under Two—First, Monarch 19016, Frank Davis & Sons; second, Homer 19988, W. S. Hill; third, Monarch 19016, W. S. Hill.

Senior Bull Calf—First, Holbrook Favorite 19729, Frank Davis & Sons; second, Cremo 22d 19731, Frank Davis & Sons; third, Denver 19989, W. S. Hill; fourth, Rollins 19983, W. S. Hill; fifth, Ridley 19986, W. S. Hill.

Junior Bull Calf—First, Cremo Lad 20528, Frank Davis & Sons; second, Burton, W. S. Hill; third, Frank Davis & Sons.

Cow Three Years or Over—First, Florence 29141, Frank Davis & Sons; second, Inez 23477, W. S. Hill; third, Buttercup 24686, W. S. Hill; fourth, Dew Drop 21054, Frank Davis & Sons; fifth, Maggie 23814, W. S. Hill.

Heifer Two Years and Under Three—First, Princess Lady 29027, Frank Davis & Sons; second, Christine 30286, W. S. Hill; third, Nora 29030, Frank Davis & Sons; fourth, Ione 28115, W. S. Hill.

Senior Yearling Heifer—First, Florence 29854, W. S. Hill; second, Minnie 30136, Frank Davis & Sons; third, Irma 29847, W. S. Hill.

Junior Yearling Heifer—First, Topsy 31240, Frank Davis & Sons; second, Inas 30136, Frank Davis & Sons; third, Becky 31848, W. S. Hill; fourth, Primrose 30467, Frank Davis & Sons.

Senior Heifer Calf—First, Sunflower 31856, W. S. Hill; second, Gazelle 32011, Frank Davis & Sons; third, Margaret 31853, W. S. Hill.

Junior Heifer Calf—First, Lady Dortha 2d 32349, Frank Davis & Sons; second, Valentine Lady 32351, Frank Davis & Sons; third, Vesta of Maple Grove 32352, Frank Davis & Sons.

Senior Champion Bull—First, Rutland 16053, W. S. Hill.

Junior Champion Bull—First, Monarch 19016, Frank Davis & Sons.

Senior Champion Cow—First, Florence 29141, Frank Davis & Sons.

Junior Champion Heifer—First, Florence 29854, W. S. Hill.

Grand Champion Bull—First, Rutland 16053, W. S. Hill.

Grand Champion Cow—First, Florence 39141, Frank Davis & Sons.

Exhibitor's Herd—First, W. S. Hill; second, Frank Davis & Sons; third, Frank Davis & Sons; fourth, W. S. Hill.

Breeder's Young Herd—First, Frank Davis & Sons; second, W. S. Hill.

Get of Sire—First, Frank Davis & Sons; second, W. S. Hill; third, Frank Davis & Sons; fourth, W. S. Hill.

Produce of Cow—First, Frank Davis & Sons; second, W. S. Hill; third, W. S. Hill.

HOLSTEIN.

EXHIBITORS.

Thomas Young Kayne, Cedar Falls, Iowa; Frank White & Son, Hampton, Iowa.

AWARDS.

JUDGE................................W. H. PEW, Ames, Iowa.

Bull Three Years or Over—First, Homestead Triumph 41912, Thomas Young Kayne; second, Sir Inka Pledge Count 45443, Frank White & Son.

Bull Two Years and Under Three—First, Groveland Inka Hijloord 57856, Frank White & Son.

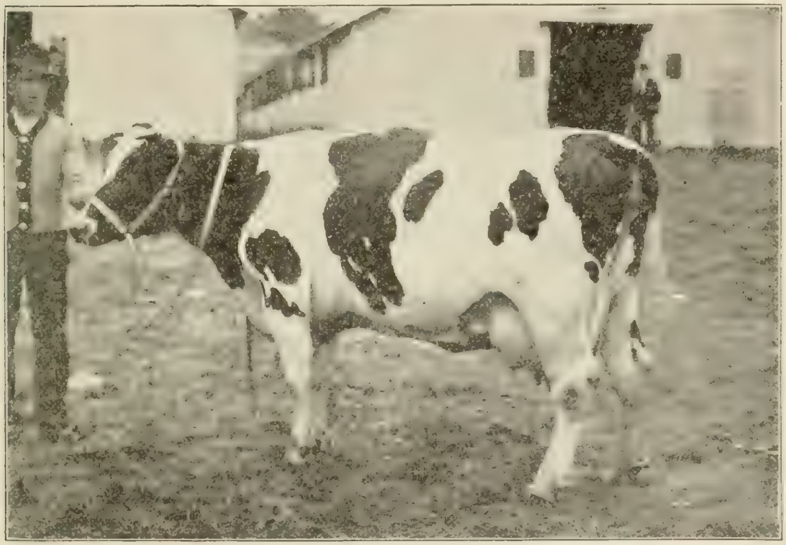
Bull One Year and Under Two—First, Velstra Vale Triumph Lad 62742, Thomas Young Kayne; second, Groveland Pontiac Houwtje 70648, Frank White & Son.

Bull Calf Under One Year—First, Triumph's King 70824, Thomas Young Kayne.

Cow Four Years or Over—First, Lady Ona Hijloord 58193, Frank White & Son; second, Beauty De Kil De Veries 74735, Frank White & Son; third, Larrie's Netherland 2d 60501, Thomas Young Kayne; fourth, Duchess Margaret Oakhurst 55008, Thomas Young Kayne.

Heifer Two Years and Under Three—First, Lady Vale Ormsby 104939, Thomas Young Kayne; second, Groveland Pauline Posch 102357, Frank White & Son; third, Albina Aesula 101201, Frank White & Son.

Heifer One Year and Under Two—First, Groveland DeKol Korndyke 122232, Frank White & Son; second, Iowa De Vries Colantha 115656, Thos. Young Kayne; third, Beaver Valley Pearl 124259, Thomas Young Kayne; fourth, Netherland Beauty Bell 12426, Thomas Young Kayne; fifth, Pontiac Johanna Witkop 137140, Frank White & Son.



CHAMPION HOLSTEIN COW
Iowa State Fair and Exposition, 1910

Heifer Calf Under One Year—First, Groveland Idske Pontiac Hijloord 137138, Frank White & Son; second, Clothilde Ruby 124258, Thomas Young Kayne; third, Groveland Pontiac Hijloord 137139, Frank White & Son; fourth, Lady Vale Ormsby 2d 135764, Thomas Young Kayne; fifth, Groveland Korndyke Cornucopia 137137, Frank White & Son; sixth, Beaver Valley De Kol Girl 130870, Thomas Young Kayne.

Senior Champion Bull—First, Groveland Inka Hijloord 57856, Frank White & Son.

Junior Champion Bull—First, Triumph's King 70824, Thomas Young Kayne.

Senior Champion Cow—First, Lady Ona Hijloord 58193, Frank White & Son.

Junior Champion Heifer—First, Groveland De Kol Korndyke 122232, Frank White & Son.

Grand Champion Bull—First, Groveland Inka Hijloord 57856, Frank White & Son.

Grand Champion Cow—First, Lady Ona Hijloord 58193, Frank White & Son.

Exhibitor's Herd—First, Frank White & Son; second, Thomas Young Kayne; third, Frank White & Son.

Breeder's Young Herd—First, Thomas Young Kayne; second, Frank White & Son.

Get of Sire—First, Thomas Young Kayne; second, Thomas Young Kayne; third, Frank White & Son.

Produce of Cow—First, Frank White & Son; second, Thomas Young Kayne.

JERSEY.

EXHIBITORS.

Dixon & Bruins, Brandon, Wisconsin; Charles Howell, Rockford, Iowa; Grant W. Nutting, Davenport, Iowa; Geo. S. Redhead, Des Moines, Iowa; Smith & Roberts, Beatrice, Nebr.

AWARDS.

JUDGE............................W. H. PEW, Ames, Iowa.

Bull Three Years or Over—First, Beauvoir's King 88006, Dixon & Bruins; second, Stockwell's Fern Lad 87843, Smith & Roberts; third, Victoria's Champion Lad 59197, Smith & Roberts; fourth, Trustee Le Ray 78466, Geo. S. Redhead.

Bull Two Years and Under Three—First, Cora's Majesty 88007, Dixon & Bruins; second, The Owl's Champion, Smith & Roberts.

Bull One Year and Under Two—First, Oxford Warder 89840, Smith & Roberts; second, Panolai Ibsen, Dixon & Bruins; third, Beauvoir's Prince 88606, Dixon & Bruins; fourth, Prince Minnetta 91673, Chas. Howell; fifth, Brown Bessie's Saint 86273, Chas. Howell.

Bull Calf Under One Year—First, Ibsen's Glory, Dixon & Bruins; second' Oxford Ixia's Majesty, Dixon & Bruins; third, Guenon's Fern Lad, Smith & Roberts; fourth, Mons. Plaisn's Andian, Geo. S. Redhead; fifth, Little Goldies' Boy, Geo. S. Redhead.

Cow Four Years or Over—First, Nesta 12677, Dixon & Bruins; second, Eminent's Leda 203690, Smith & Roberts; third, Dixon's Harbinger 234545, Dixon & Bruins; fourth, Golden Jolly's Secret 203659, Smith & Roberts; fifth, Mayflower's Glory 22107, Dixon & Bruins; sixth, Leda's Bluebell 240724, Geo. S. Redhead.

Cow Three Years and Under Four—First, Morocco's Princess 234198, Smith & Roberts; second, Derry's Charlotte 238341, Dixon & Bruins.

Heifer Two Years and Under Three—First, Coulisse 16th, Dixon & Bruins; second, Silverine's Brown Lady 219449, Smith & Roberts; third, Constance Gandin 240745, Geo. S. Redhead; fourth, Wonder's Princess 218549, Smith & Roberts; fifth, Beauvoir's Queen 238362, Dixon & Bruins; sixth, Brown Minnetta 3d 242913, Chas. Howell.

Heifer One Year and Under Two—First, Belmont's Pride, Smith & Roberts; second, May Queen 4th, Dixon & Bruins; third, Coulisse 17th, Dixon & Bruins; fourth, Belmont Wonder, Dixon & Bruins; fifth, Smith & Roberts; sixth, Harbinger Lass 234554, Dixon & Bruins; seventh, Princess Wenonia 242916, Smith & Roberts.

Heifer Calf Under One Year—First, Morny's Beauvoir, Dixon & Bruins; second, Kitts, Dixon & Bruins; third, Miss Forquilanna 242918, Chas. Howell; fourth, Belmont's Lady Gold, Smith & Roberts; fifth, Merlin, Dixon & Bruins; sixth, Belmont's Lady Wonder, Smith & Roberts.

Senior Champion Bull—First, Beauvoir's King 88006, Dixon & Bruins.

Junior Champion Bull—First, Oxford Warder 89840, Smith & Roberts.

Senior Champion Cow—First, Nesta 12677, Dixon & Bruins.

Junior Champion Heifer—First, Belmont's Pride, Smith & Roberts.

Grand Champion Bull—First, Beauvoir's King 88006, Dixon & Bruins.

Grand Champion Cow—First, Nesta 12677, Dixon & Bruins.

Exhibitor's Herd—First, Dixon & Bruins; second, Smith & Roberts; third, Smith & Roberts; fourth, Geo. S. Redhead.

Breeder's Young Herd—First, Smith & Roberts; second, Chas. Howell.

Get of Sire—First, Dixon & Bruins; second, Smith & Roberts; third, Chas. Howell; fourth, Geo. S. Redhead.

Produce of Cow—First, Smith & Roberts; second, Smith & Roberts; third, Dixon & Bruins; fourth, Chas. Howell; fifth, Chas. Howell; sixth, Geo. S. Redhead.

GUERNSEY.

EXHIBITORS.

A. W. & F. E. Fox, Waukesha, Wisconsin; W. W. Marsh, Waterloo, Iowa; Wilcox & Stubbs, Des Moines, Iowa.

AWARDS.

JUDGE..............................W. H. PEW, Ames, Iowa.

Bull Three Years or Over—First, Imp. Lord Mar 14359, W. W. Marsh; second, Golden Ben 7837, A. W. & F. E. Fox; third, Glenwood's Combination 5th 11354, A. W. & F. E. Fox; fourth, Boisterous 9714, A. W. & F. E. Fox; fifth, Monoa 11687, Wilcox & Stubbs.

Bull Two Years and Under Three—First, Imp. Hero of the Courtle Blisq 14088, W. W. Marsh; second, King Talladeen of Chestnut Hill 13460, A. W. & F. E. Fox; third, Prince Lovier 13863, Wilcox & Stubbs.

Bull One Year and Under Two—First, Dairy Maid's Pride of Iowa, W. W. Marsh; second, Longwater Royal 14253, A. W. & F. E. Fox; third, Wait A While 14614, A. W. & F. E. Fox; fourth, Goda's Prince Royal 15476, Wilcox & Stubbs.

Bull Calf Under One Year—First, Meriann Son of Lavourne 16151, W. W. Marsh; second, Stranford's Glenwood of Pinehurst 3d 16202, A. W.

& F. E. Fox; third, Bob Rilma 16141, Wilcox & Stubbs; fourth, Lord Mar 2d, W. W. Marsh; fifth, Wedding Bells of Waukesha 16844, A. W. & F. E. Fox.

Cow Four Years or Over—First, Lalla Boots of Chantilly 3d 14973, A. W. & F. E. Fox; second, Duenna B. 20304, A. W. & F. E. Fox; third, Dairy Maid of Pinehurst, W. W. Marsh; fourth, Thalma's Queen 20641, Wilcox & Stubbs; fifth, Glencoes Bopeep 18602, W. W. Marsh.

Cow Three Years and Under Four—First, Emma F. 22677, A. W. & F. E. Fox; second, Queen of the Elms 23793, A. W. & F. E. Fox; third, Duenna F. 22676, A. W. & F. E. Fox.

CHAMPION GUERNSEY BULL
Iowa State Fair and Exposition, 1910

Heifer Two Years and Under Three—First, Imp. Lady Smith of Isle 28355, W. W. Marsh; second, Imp. Amable of the Hugetts 28353, W. W. Marsh; third, Citation 24605, A. W. & F. E. Fox; fourth, Margaret of the Grove, A. W. & F. E. Fox; fifth, Imp. Lulia of the Ballamen 28350, W. W. Marsh.

Heifer One Year and Under Two—First, Darsey Daisy 8781, W. W. Marsh; second, Susie Allen 27758, A. W. & F. E. Fox; third, Daisy Des Rovants 31953, W. W. Marsh; fourth, Carnisole of Skippack 27201, A. W. & F. E. Fox; fifth, Molly of Pomeroy 27605, A. W. & F. E. Fox.

Heifer Calf Under One Year—First, Fenleaf of Arcody 29018, W. W. Marsh; second, Lassie Mar, W. W. Marsh; third, Glenwood Girl of Waukesha 29640, A. W. & F. E. Fox; fourth, Caridods Dairymaid 31731, W. W. Marsh; fifth, Lady Whitefoot 2d 31825, A. W. & F. E. Fox.

Senior Champion Bull—First, Imp. Lord Mar 14359, W. W. Marsh.

Junior Champion Bull—First, Meriann Son of Lavourne 16151, W. W. Marsh.

Senior Champion Cow—First, Lalla Boots of Chantilly 3d 14973, A. W. & F. E. Fox.

Junior Champion Heifer—First, Darsey Daisy 8781, W. W. Marsh.

Grand Champion Bull—First, Imp. Lord Mar 14359, W. W. Marsh.

Grand Champion Cow—First, Lalla Boots of Chantilly 3d 14973, A. W. & F. E. Fox.

Exhibitor's Herd—First, W. W. Marsh; second, W. W. Marsh; third, A. W. & F. E. Fox; fourth, A. W. & F. E. Fox; fifth, Wilcox & Stubbs.

Get of Sire—First, W. W. Marsh; second, A. W. & F. E. Fox; third, Wilcox & Stubbs.

Produce of Cow—First, W. W. Marsh; second, A. W. & F. E. Fox; third, Wilcox & Stubbs.

SPECIALS OFFERED BY THE AMERICAN GUERNSEY CATTLE CLUB.

Aged Bull—First, Imp. Lord Mar 14359, W. W. Marsh; second, Golden Ben 7837, A. W. & F. E. Fox.

Aged Cow—First, Emma F. 22677, A. W. & F. E. Fox; second, Queen of the Elms 23793, A. W. & F. E. Fox.

Exhibitor's Herd—First, W. W. Marsh; second, W. W. Marsh.

AYRSHIRE.

EXHIBITORS.

Adam Seitz, Waukesha Wisconsin; W. W. Blake Arkcoll, Paoli, Pa.

AWARDS.

Judge............................W. H. Pew, Ames, Iowa.

Bull Three Years or Over—First, Bargneock Gay Cavalier 11981, Adam Seitz.

Bull One Year and Under Two—First, Adam Croft 11787, Adam Seitz.

Bull Calf Under One Year—First, Majestic of Spring City 12700, Adam Seitz; second, Peter Pan of Spring City 12701, Adam Seitz.

Cow Four Years or Over—First, ————, Adam Seitz; second, Cleopatra of Waukesha 19848, Adam Seitz.

Cow Three Years and Under Four—First, Imp. Barchester Cora 27666, Adam Seitz; second, Villo Pender 23499, Adam Seitz.

Heifer Two Years and Under Three—First, Palmerston Miss Bloom 2d 27009, Adam Seitz; second, Sir Croft Denty of Spring City 27663, Adam Seitz.

Heifer One Year and Under Two—First, Cleopatra Croft of Spring City 26693, Adam Seitz; second, Sir Croft of Spring City 26694.

Heifer Calf Under One Year—First, Fragrant Lilly of Spring City 27664; second, Melrose Queen of Spring City 27665, Adam Seitz.

CHAMPION AYRSHIRE COW

Iowa State Fair and Exposition, 1910

Senior Champion Bull—First, Bargneock Gay Cavalier 11981, Adam Seitz.

Junior Champion Bull—First, Adam Croft 11787, Adam Seitz.

Senior Champion Cow—First, Adam Seitz.

Junior Champion Heifer—First, Cleopatra Croft of Spring City 26694, Adam Seitz.

Grand Champion Bull—First, Bargneock Gay Cavalier 11981; Adam Seitz.

Grand Champion Cow—First, Adam Seitz.

Exhibitor's Herd—First, Adam Seitz.

Breeder's Young Herd—First, Adam Seitz.

Get of Sire—First, Adam Seitz.

Produce of Cow—First, Adam Seitz; second, Adam Seitz.

TEST OF MILCH COWS.

EXHIBITORS.

Smith & Roberts, Beatrice, Nebraska; Frank White & Son, Hampton, Iowa; C. T. Graves, Maitland, Missouri; A. W. & F. E. Fox, Waukesha, Wisconsin.

AWARDS.

JUDGE........................E. S. ESTEL, Waterloo, Iowa.

Test of Milch Cows—First, C. T. Graves; second, Smith & Roberts; third, C. T. Graves; fourth, A. W. & F. E. Fox.

SPECIAL BY THE AMERICAN JERSEY CATTLE CLUB.

To First in Butter Test—First, C. T. Graves.

FAT SHORT-HORNS.

EXHIBITORS.

W. W. Brown, Amenia, North Dakota; Carpenter & Ross, Mansfield, Ohio; W. H. Dunwoody, Minneapolis, Minnesota; F. W. Harding, Waukesha, Wisconsin; E. M. Hall, Carthage, Missouri; Peak & Saunders, Manilla, Iowa; T. Swearingen & Son, Hedrick, Iowa; D. Tietjen, Bellevue, Iowa; G. H. White, Emerson, Iowa.

AWARDS.

JUDGE............J. DEANE WILLIS, Codford, Wilshire, Eng.

(PURE BRED).

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Rosebud, Carpenter & Ross; second, Jim, Peak & Saunders; third, Governor, F. W. Harding; fourth, General Gontlet, Peak & Saunders.

Steer, Spayed or Martin Heifer One Year and Under Two—First, Red Wonder; second, Roan Billy, Carpenter & Ross; third, Thomas, W. W. Brown; fourth, Tommy Bert.

Steer, Spayed or Martin Heifer, Under One Year—First, Richard, W. W. Brown; second, King George, G. H. White; third, Hawthorne, Carpenter & Ross; fourth, George, Peak & Saunders.

Champion Steer, Spayed or Martin Heifer—First, G. H. White.

Champion Group of Three Head, Owned by Exhibitor—First, Carpenter & Ross; second, Peak & Saunders; third, G. H. White; fourth, F. W. Harding.

(GRADE OR CROSS BRED).

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Chancellor's Seal, W. H. Dunwoody; second, Red King, Carpenter & Ross; third, Mike, Peak & Saunders; fourth, Laster, Peak & Saunders.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Wilfer, Peak & Saunders; second, Pearl, W. H. Dunwoody; third, Watchword, Carpenter & Ross; fourth, Carpenter & Ross.

Steer, Spayed or Martin Heifer, Under One Year—First, Jack J, G. H. White; second, Pat, Peak & Saunders; third, Jim Croe, Carpenter & Ross; fourth, Twinkle, Peak & Saunders.

Champion Steer, Spayed or Martin Heifer—First, Chancellor's Seal, W. H. Dunwoody.

Champion Group of Three Head, Owned by Exhibitor—First, Carpenter & Ross; second, W. H. Dunwoody; third, Peak & Saunders; fourth, Peak & Saunders.

FAT HEREFORD.

EXHIBITORS.

S. L. Brock, Lake Geneva, Wisconsin; Jesse Engle & Son, Sheridan, Wyoming; Robt. H. Hazlett, Eldorado, Kansas; Warren T. McCray, Kentland, Indiana; John E. Painter, Roggen, Colorado; Cyrus A. Tow, Norway, Iowa; W. S. Van Natta & Son, Fowler, Indiana; A. L. Weston, Edgewater, Colorado.

AWARDS.

JUDGE....................R. J. KINZER, Manhattan, Kansas.

(PURE BRED).

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, John E. Painter.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Woody Lea Duplicate 361213, S. L. Brock; second, Roggen 324751, John E. Painter; third, Joe, W. S. Van Natta & Son; fourth, Lakeside 324748, John E. Painter.

Steer Spayed or Martin Heifer Under One Year—First, Donald Lad 5th 344983, W. S. Van Natta & Son; second, Frederic Reak 347894, Warren T. McCray; third, Brocade 3d 341211, S. L. Brock; fourth, Roggen Jr., John E. Painter.

Champion Steer, Spayed or Martin Heifer—First, Donald Lad 344983, W. S. Van Natta & Son.

Champion Group of Three, Owned by One Exhibitor—First, John E. Painter.

Steer, Spayed or Martin Heifer, One Year Old and Under Two—First, Paragon A., S. L. Brock; second, Teddy, W. S. Van Natta; third, Major, Cyrus A. Tow.

Steer, Spayed or Martin Heifer, Under One Year—First, Cyrus A. Tow.

Champion Steer, Spayed or Martin Heifer—First, Paragon A., S. L. Brock.

FAT ABERDEEN-ANGUS.

EXHIBITORS.

Escher & Ryan, Irwin, Iowa; C. D. McPherson, Fairfield, Iowa; W. J. Miller, Newton, Iowa.

AWARDS.

JUDGE........................O. E. BRADFUTE, Xenia, Ohio.

(PURE BRED).

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Proud Black Cap 1572, W. J. Miller; second, Loiterer, Escher & Ryan.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Earl King, Escher & Ryan; second, Kings Choice 1655, W. J. Miller; third, Erminia, Escher & Ryan; fourth, Jasper's Pride 1637, W. J. Miller.

Steer, Spayed or Martin Heifer, Under One Year—First, Kinkel, Escher & Ryan; second, Black Burn, W. J. Miller; third, Escher & Ryan.

Champion Steer, Spayed or Martin Heifer—First, Kings Choice 1655, W. J. Miller.

Champion Group of Three Head Owned by Exhibitor—Escher & Ryan; second, W. J. Miller.

(GRADE OR CROSS BRED).

Steer, Spayed or Martin Heifer; Two Years and Under Three—First, Donald, W. J. Miller; second, Dutchman, C. D. McPherson.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Jerry, W. J. Miller; second, Scotchman, C. D. McPherson.

Steer, Spayed or Martin Heifer, Under One Year—First, Metz Hero; second, Sir George, W. J. Miller; third, ———, W. J. Miller; fourth, C. D. McPherson.

Champion Steer, Spayed or Martin Heifer—First, Jerry, W. J. Miller.

Champion Group of Three Head Owned by Exhibitor—First, W. J. Miller; second, C. D. McPherson.

FAT GALLOWAY.

EXHIBITORS.

C. D. McPherson, Fairfield, Iowa.

AWARDS.

JUDGE........................E. T. DAVIS, Iowa City, Iowa.

(PURE BRED).

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, C. D. McPherson.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, C. D. McPherson.

Steer, Spayed or Martin Heifer, Under One Year—First, C. D. McPherson.

Champion Steer, Spayed or Martin Heifer—First, C. D. McPherson.

Champion Group of Three Head, Owned by Exhibitor—First, C. D. McPherson.

FAT CATTLE—GRAND CHAMPION.

EXHIBITORS.

Only Winners of Champion Honors in Their Respective Sections May Compete in This Class.

AWARDS.

JUDGE....................R. J. KINZER, Manhattan, Kansas.
JUDGE........................O. E. BRADFUTE, Xenia, Ohio.
JUDGE..........J. DEANE WILLIS, Codford Wilshire, England.

Grand Champion—First, Paragon, S. L. Brock.
Grand Champion Group—First, Carpenter & Ross.

SWINE DEPARTMENT.

SUPERINTENDENT........R. S. JOHNSTON, Columbus Junction.

POLAND CHINA.

EXHIBITORS.

F. W. Akers, Laurel, Iowa; J. M. Blackford, Hillsboro, Iowa; S. P. Chiles, Fairfield, Iowa; Walter Chiles, Fairfield, Iowa; A. J. Banks, Knoxville, Iowa; J. I. Davis, Mt. Hamill, Iowa; J. S. Fawcett & Son, Springdale, Iowa; S. Fleming, Stuart, Iowa; Fuller Bros., Humpheys, Missouri; C. C. Croxen, Atalissa, Iowa; M. H. Corey, Lockridge, Iowa; R. H. Fichtenmueller, Farmington, Iowa; John Francis & Sons, New Lenox, Illinois; J. E. Francis, New Lenox, Illinois; J. W. Garvey, Auburn, Illinois; Geo. Glynn, Sioux Rapids, Iowa; R. W. Halford, Manning, Iowa; Mrs. Ermile Hunt, Carlisle, Iowa; Elmer Henderson, Leland, Illinois; Chas. W. Humerick, Atlantic, Iowa; Nels C. Jensen, Exira, Iowa; A. Kool, Fifield, Iowa; Chas. H. Krum, Postville, Iowa; Joe Kramer, Elkader, Iowa; C. F. Keeling, Avon, Iowa; Henry Lauer, El Dorado, Iowa; A. J. Lytle, Oskaloosa, Iowa; J. V. Lingenfelter, Altoona, Iowa; Henry Lenz, Lansing, Iowa; G. F. Marshall, Monroe, Iowa; Theo Martin, Bellevue, Iowa; J. A. Mason, Carlisle, Iowa; J. E. Meharry, Tolona, Illinois; John F. Meyer, Newton, Iowa; E. M. Metzger, Fairfield, Iowa; Paul & Leahy, Laurel, Iowa; D. H. Paul, Laurel, Iowa; A. J. Podendorf, Logan, Iowa; C. V. Robson, Scranton, Iowa; W. Z. Swallow, Waukee, Iowa; Mark I. Shaw, Monroe, Iowa; P. F. Schwimley, Kalona, Iowa; Whitacre & Son, West Liberty, Iowa; Wm. Wingate, Laredo, Missouri; J. H. Watson, Madrid, Iowa; Wellington & Spring, Clymers, Indiana; Oliver Whitman, Biggsville, Illinois; R. E. West, Altoona, Iowa.

AWARDS.

JUDGE.....................J. M. STEWART, Ainsworth, Iowa.

Boar Two Years or Over—First, Chief Impudence, J. E. Meharry; second, Royalty, John Francis & Sons; third, Chief Price Again, Henry Lauer; Fourth, Inspiration, S. G. McFadden; fifth, Jarrett, Fuller Bros.; sixth, C. H.'s Perfection, Chas. H. Krumm; seventh, Victor Tecumseth, C. V. Robson.

Boar Eighteen Months, Under Two Years—First, Illuminator, J. E. Meharry; second, Reflector 2d, Oliver Whiteman; third, Perfection E. L. 2d, Elmer Henderson; fourth, Paul & Leahy; fifth, John Francis & Sons; sixth, S. P. Chiles; seventh, Wm. Wingate.

Boar Six Months, Under One Year—First, J. E. Meharry; second, Wellington & Spring; third, F. W. Akers; fourth, D. H. Paul; fifth, Oliver Whiteman; sixth, Joe Kramer; seventh, J. A. Mason.

Boar Under Six Months—First, S. P. Chiles; second, John Francis & Sons; third, John Francis & Sons; fourth, Wm. Wingate; fifth, S. P. Chiles; sixth, J. E. Meharry; seventh, Fuller Bros.

Sow Two Years or Over—First, Perfect Dewdrop 2d, J. E. Meharry; second, Margaret 6th, John Francis & Sons; third, Black Meg, Joe Kramer; fourth, Oh My, Elmer Henderson; fifth, Good Luck, S. P. Chiles; sixth, Beauty Bell, D. H. Paul; seventh, Graceful F., John Francis & Sons.

Sow Eighteen Months, Under Two Years—First, Violet, J. E. Meharry; second, Walkover 2d, Wellington & Spring; third, Walkover 3d, Wellington & Spring; fourth, Hazle Walkover 2d, J. E. Meharry; fifth, Laura Queen 2d, D. H. Paul; sixth, Medlar Maid, F. W. Akers; seventh, A. P. Alsin, W. Z. Swallow.

Sow One Year, Under Eighteen Months—First, Miss Keep Ahead, Wellington & Spring; second, Sweet Dream, John Francis & Sons; third, Queen of the Mist, J. E. Meharry; fourth, Lady High Style, Elmer Henderson; fifth, Walkover 2d, Wellington & Spring; sixth, Premier Perfection, M. H. Corey; seventh, Laurel Queen 3d, D. H. Paul.

Sow Six Months, Under One Year—First, Cinderella, J. E. Meharry; second, Satin Finish, S. P. Chiles; third, Cinderella 2d, J. E. Meharry; fourth, Walkovers L. & W., Wellington & Spring; fifth, ———, John Francis & Sons; sixth, Walkover's Choice, Wellington & Spring; seventh, ———, John Francis & Sons.

Sow Under Six Months—First, J. S. Fawcett; second, J. W. Fawcett; third, S. P. Chiles; fourth, John Francis & Sons; fifth, S. P. Chiles; sixth, Walter Chiles; seventh, Elmer Henderson.

Senior Champion Boar—B. L.'s Perfection, J. E. Meharry.

Junior Champion Boar————, S. P. Chiles.

Senior Champion Sow————, J. E. Meharry.

Junior Champion Sow————, J. E. Meharry.

Grand Champion Boar—B. L.'s Perfection, J. E. Meharry.

Grand Champion Sow—Violet, J. E. Meharry.

Boar and Three Sows, Over One Year—First, J. E. Meharry; second, John Francis & Sons; third, Wellington & Spring; fourth, J. E. Meharry; fifth, Paul & Leahy; sixth, Elmer Henderson; seventh, S. Fleming.

Boar and Three Sows Under One Year—First, J. E. Meharry; second, John Francis & Sons; third, Wellington & Spring; fourth, D. H. Paul; fifth, F. W. Akers; sixth, Nels C. Jensen.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Wellington & Spring; second, John Francis & Sons; third, J. E. Meharry; fourth, D. H. Paul; fifth Oliver Whiteman.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, J. E. Meharry; second, John Francis; third, Wellington & Spring; fourth, D. H. Paul; fifth, F. W. Akers; sixth, Nels C. Jensen.

Get of Sire—First, Erector, J. E. Meharry; second, Master Walkover, Wellington & Spring; third, ————, John Francis & Sons; fourth, D. Harvester, S. P. Chiles; fifth, Magician, D. H. Paul; sixth, Master Walkover, Wellington & Spring; seventh, Iowa Perfection, S. Fleming.

Produce of Sow—First, Wellington & Spring;; second, John Francis & Sons; third, S. P. Chiles; fourth, D. H. Paul; fifth, Wellington & Spring; sixth, S. Fleming; seventh, Elmer Henderson.

DUROC JERSEYS.

EXHIBITORS.

H. S. Allen, Russell, Iowa; A. P. Alsin, Boone, Iowa; J. B. Ashby, Audubon, Iowa; H. E. Browning, Hersman, Illinois; F. B. Butterfield, Ankeny, Iowa; Balmat & Son, Mason City, Iowa; L. Baker, Mingo, Iowa; Baxter & Comer, Carlinville, Illinois; W. R. Bennethun, Madrid, Iowa; M. C. Cramer & Son, Monroe, Iowa; Charles Cooper, Larone, Illinois; E. M. Castle & Son, Joy, Illinois; Sherman Edwards, Bondurant, Iowa; S. P. Freed, Ames, Iowa; Gawley & Southall, Irwin, Iowa; J. E. Grant, Carlisle, Iowa; Goddard & Schuery, Harlan, Iowa; R. J. Harding, Macedonia, Iowa; J. E. Hammar, Jefferson, Iowa; F. H. Herring, Iowa City, Iowa; Hanks & Bishop, New London, Iowa; Claude Huffman, Scranton, Iowa; Joshua Halton, Linden, Iowa; Miles Harkens, Pleasantville, Iowa; G. W. Hockett, Manning, Iowa; John Justice, Ankeny, Iowa; Ira Jackson, Tippacanoe City, Ohio; Geo. E. Johnson, Essex, Iowa; C. E. Luther, Grand Junction, Iowa; Geo. L. Miller, Coal Valley, Illinois; B. C. Martz, Polk City, Iowa; C. L. McLaughlin, Panora, Iowa; H. C. Nichols, West Liberty, Iowa; D. Nauman, West Liberty, Iowa; O. A. Olson, Madrid, Iowa; A. J. Pinck, Maxwell, Iowa; W. H. Rodenbaugh, Macedonia, Iowa; F. A. Strong, Orient, Iowa; W. M. Sells & Sons, Indianola, Iowa; Geo. Seckman, Mt. Sterling, Illinois; Sheldon Bros., Shannon City, Iowa; Smith Bros., Tripoli, Iowa; S. W. Stuart & Sons, Kennard, Nebraska; C. O. Thornburg, Pleasantville, Iowa; John Thompson, Lake City, Iowa; L. E. Thomas, Golden, Illinois; C. E. Veak, Essex, Iowa; L. R. Van Nice, Russell, Iowa; Grant White, Afton, Iowa; Wilson & Stuart, Blair, Nebraska; W. B. Wilson, Delta, Iowa; Waltemeyer Bros., Melbourne, Iowa; J. W. Kent, Lake City, Iowa; A. R.

Olson, Woodward, Iowa; Ernest Pancake, Ransom, Illinois; C. A. Rasmussen, Harlan, Iowa; Arthur L. Parks, Leland, Illinois; H. A. Sexsmith, Greenfield, Iowa.

AWARDS.

JUDGE.....................PROF. W. J. KENNEDY, Ames, Iowa.
JUDGE.....................PROF. H. H. KILDEE, Ames, Iowa.

Boar Two Years or Over—First, Crimson Wonder III, Baxter & Comer; second, Chiefs Sensation Jr., Sherman Edwards; third, Chief's Select, Balmat & Son; fourth, The Wonder, F. H. Herring; fifth, McNeal's Model, Baxter & Comer; sixth, C. H.'s Special, Claude Huffman; seventh, Defender, H. E. Browning.

Boar Eighteen Months, Under Two Years—First, Tippy O'Ryan, Ira Jackson; second, Golden Medal, Balmat & Son; third, Prince Wonder Again, Geo. L. Miller; fourth, H. A. Choice Good V, H. S. Sexsmith; fifth, Educators Advance, H. E. Browning; sixth, Peachy Commodore, D. Nauman.

Boar One Year, Under Eighteen Months—First, Freed's Colonel, S. P. Freed; second, Nora's Wonder, Gawley & Southall; third, Proud Colonel, Hanks & Bishop; fourth, Colonel of Colonels, Baxter & Comer; fifth, High Colonel, C. E. Veak; sixth, Gold Model XVIII, Waltemeyer Bros.; seventh, Munsey Again, A. P. Alsin.

Boar Six Months, Under One Year—First, Colonel Wiletta, Ira Jackson; second, Duroc Chief, S. W. Stuart & Sons; third, Pinehead's Munsey, A. P. Alsin; fourth, Colonel Brown, H. E. Browning; fifth, Jewells Model, Hanks & Bishop; sixth, Red Tecumseh, S. W. Stuart; seventh, Crimson Chief Wonder, W. B. Wilson.

Boar Under Six Months—First, H. A.'s Wonder, W. M. Sells & Sons; second, ———, Balmat & Son; third, Colonel II, Baxter & Comer; fourth, ———, Waltemeyer Bros.; fifth, ———, Waltemeyer Bros.; sixth, ———, J. B. Ashby; seventh, Cherry Boy, Ira Jackson.

Sow Two Years or Over—First, Golden Queen 3d, Waltmeyer Bros.; second, Harding's Model 2d, R. J. Harding; third, Fancy Lady, S. W. Stuart; fourth, Maple C. W., F. H. Herring; fifth, Clay Hill Queen, H. E. Browning; sixth, Model Girl 3d, Waltemeyer Bros.; seventh, S. E.'s Model 10th, Goddard & Schuery.

Sow Eighteen Months, Under Two Years—First, Model Lady, Waltemeyer Bros.; second, Lady Wonder 8th, H. S. Allen; third, Martha Chief, J. E. Hammar; fourth, Clara 2d, Baxter & Comer; fifth, Fairview 4th, E. M. Castle & Son; sixth, Choice Good's Lady, Goddard & Schuery; seventh, Secret Dream, H. E. Browning.

Sow One Year, Under Eighteen Months—First, Golden Queen 6th, Waltemeyer Bros.; second, Lady Coral, Baxter & Comer; third, Golden Nellie, W. R. Bennethun; fourth, Magnetia B., Baxter & Comer; fifth, Browning Dream, H. E. Browning; sixth, Proud Model, Hanks & Bishop; seventh, Willetta 16th, Ira Jackson.

Sow Six Months, Under One Year—First, Crimson's Model, Baxter & Comer; second, Grace Wonder, Hanks & Bishop; third, Jewels Model, Hanks & Bishop; fourth, Golden Queen 7th, Waltemeyer Bros.; fifth, Lady Muncie, A. P. Alsin; sixth, Claremont Daisy, J. B. Ashby; seventh, Browning's Dream Maid, H. E. Browning.

Sow Under Six Months—First, ———, Wilson & Stuart; second, Model Girl 4th, Waltemeyer Bros.; third, ———, Balmat & Son; fourth, Mabel Wonder 4th, J. E. Hammer; fifth, Balmat & Son; sixth, L. E. Thomas; seventh, ———, C. E. Veak.

Senior Champion Boar—First, Freed's Colonel, S. P. Freed.

Junior Champion Boar—First, Colonel Willetta, Ira Jackson.

Senior Champion Sow—First, Golden Queen III, Waltemeyer Bros.

Junior Champion Sow—First, Crimson's Model, Baxter & Comer.

Grand Champion Boar—First, Freed's Colonel, S. P. Freed.

Grand Champion Sow—First, Golden Queen III, Waltemeyer Bros.

Boar and Three Sows Over One Year—First, Baxter & Comer; second, Waltemeyer Bros.; third, Ira Jackson; fourth, Hanks & Bishop; fifth, Balmat & Son; sixth, F. H. Herring; seventh, H. E. Browning.

Boar and Three Sows Under One Year—First, Baxter & Comer; second, Waltemeyer Bros.; third, Ira Jackson; fourth, Hanks & Bishop; fifth, Balmat & Son; sixth, H. E. Browning; seventh, A. P. Alsin.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Waltemeyer Bros.; second, Ira Jackson; third, J. E. Hammer; fourth, O. A. Olson; fifth, Balmat & Son; sixth, S. W. Stuart & Sons; seventh, E. M. Castle & Son.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Baxter & Comer; second, Waltemeyer Bros.; third, Ira Jackson; fourth, Hanks & Bishop; fifth, Balmat & Son; sixth, H. E. Browning; seventh, A. P. Alsin.

Get of Sire—First, Waltemeyer Bros.; second, Baxter & Comer; third, Ira Jackson; fourth, Hanks & Bishop; fifth, Balmat & Son; sixth, Baxter & Comer; seventh, W. M. Sells & Son.

Produce of Sow—First, Baxter & Comer; second, Ira Jackson; third, Hanks & Bishop; fourth, Balmat & Son; fifth, W. M. Sells & Son; sixth, Waltemeyer Bros.; seventh, A. P. Alsin.

SPECIALS.

AMERICAN DUROC-JERSEY SWINE BREEDERS ASSN.

Best Herd Under One Year Old, Bred and Owned by Exhibitor—First, W. M. Sells & Son; second, R. J. Harding; third, F. H. Herring.

CHESTER WHITE.

EXHIBITORS.

Alden Anderson, Radcliffe, Iowa; B. M. Boyer, Farmington, Iowa; W. T. Barr, Ames, Iowa; W. H. Dunbar, Jefferson, Iowa; G. L. Emmert & Sons & Hemmerling, Mason City, Iowa; Wm. Hoover, Oskaloosa, Iowa; E. L. Leavens, Shell Rock, Iowa; Geo. A. Lasley, Selma, Iowa; D. H. Lewis, Geneso, Illinois; J. A. Loughridge, Delta, Iowa; J. A. Mahannah North

English, Iowa; Will Michael, Selma, Iowa; E. L. Nagle & Son, Deep River, Iowa; Otto B. Schulze, Nashville, Michigan; Wm. Whitted & Son, Monroe, Iowa; Melvin W. Young, Ankeny, Iowa.

AWARDS.

JUDGE ....PROF. H. H. KILDEE, Ames, Ia.

Boar Two Years or Over—First, Marcus, D. H. Lewis; second, Christopher 1st, E. L. Leavens; third, Humbert's Choice, E. L. Nagle & Son; fourth, Scott No. 1, Otto B. Schulze; fifth, Scottish, Otto B. Schulze; sixth, Boy 1st, E. L. Leavens; seventh, Perfection, Geo. A. Lasley.

Boar Eighteen Months, Under Two Years—First, D. H. Lewis; second, Hiland Harry, W. H. Dunbar.

Boar One Year, Under Eighteen Months—First, Chief Mahaska, Wm. Hoover; second, Hall, E. L. Leavens; third, Commander, D. H. Lewis; fourth, John E., L. Leavens; fifth, King, Alden Anderson; sixth, Billie's Choice, Will Michael; seventh, Grand Leader 2d, Wm. Hoover.

Boar Six Months, Under One Year—First, Pathfinder, E. L. Nagle & Son; second, St. Elma, D. H. Lewis; third, Boncer, D. H. Lewis; fourth, Cerragordon John, G. L. Emmert & Sons & Hemmerling; fifth, Modler O. K. 2d, G. L. Emmert & Sons & Hemmerling; sixth, Chief, Alden Anderson; seventh, E. L. Nagle & Son.

Boar Under Six Months—First, Bright Eye, D. H. Lewis; second, Tender, D. H. Lewis; third, Advertiser, E. L. Nagle & Son; fourth, Highball, Alden Anderson; fifth, ———, W. T. Barr; sixth, ———, Otto B. Schulze; seventh, ———, Wm. Whitted & Son.

Sow Two Years, or Over—First, Graceful, W. H. Dunbar; second, Fashion, E. L. Nagle & Son; third, White Pearl, D. H. Lewis; fourth, Flowsie, E. L. Nagle & Son; fifth, White Lillie, D. H. Lewis; sixth, Cerrodora Ideal, G. L. Emmert & Sons; seventh, Augusta 1st, E. L. Leavens.

Sow Eighteen Months, Under Two Years—First, Bell, E. L. Nagle & Son; second, Myrtle, D. H. Lewis; third, Mamie, D. H. Lewis.

Sow One Year, Under Eighteen Months—First, Nellie, D. H. Lewis; second, Miss Perfection, Geo. A. Lasley; third, Maud's Baby 2d, G. L. Emmert & Sons & Hemmerling; fourth, Marion, D. H. Lewis; fifth, Jennett 1st, E. L. Leavens; sixth, Jennett 2d, E. L. Leavens; seventh, Chickasaw Belle, G. L. Emmert & Sons & Hemmerling.

Sow Six Months, Under One Year—First, Pearl, D. H. Lewis; second, Cerrogorda Alice, G. L. Emmert & Sons & Hemmerling; third, Cassie 4th, Wm. Hoover; fourth, Cerrogorda May, G. L. Emmert & Sons & Hemmerling; fifth, Lady Fancy, Alden Anderson; sixth, Elsie, D. H. Lewis; seventh, Daisy, E. L. Nagle & Son.

Sow Under Six Months—First, Myra, D. H. Lewis; second, Lula, E. L. Nagle & Son; third, Fancy Girl 3d, Wm. Hoover; fourth, Laura, D. H. Lewis; fifth, ———, W. T. Barr; sixth, Topsy, E. L. Nagle & Son; seventh, Fancy Girl, Wm. Hoover.

Senior Champion Boar—Chief Mahaska, Wm. Hoover.

Junior Champion Boar—Bright Eyes, D. H. Lewis.

Senior Champion Sow—Tillie, D. H. Lewis.

Boar and Three Sows Over One Year—First, Chief Mahaska, E. L. Nagle & Son.

Boar and Three Sows Under One Year—First, St. Elma, D. H. Lewis; second, Bright Eyes, D. H. Lewis; third, Pathfinder, E. L. Nagle & Son; fourth, Chief, Alden Anderson; fifth, Cerroda John, G. L. Emmert & Son & Hemmerling; sixth, Grand Leader 2d, Wm. Hoover; seventh, Otto B. Schulze.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Marcus, D. H. Lewis; second, Leader, E. L. Nagle & Son; third, Christopher 1st, E. L. Leavens; fourth, Commander, D. H. Lewis; fifth, Long John, Otto B. Schulze.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, D. H. Lewis; second, D. H. Lewis; third, E. L. Nagle & Son; fourth, Alden Anderson; fifth, G. L. Emmert & Son & Hemmerling; sixth, Wm. Hoover; seventh, Otto B. Schulze.

Get of Sire—First, E. L. Nagle & Son; second, D. H. Lewis; third, D. H. Lewis; fourth, E. L. Leavens; fifth, Alden Anderson; sixth, Wm. Hoover; seventh, Otto B. Schulze.

Produce of Sow—First, Aleda Bell, E. L. Nagle & Son; second, Fancies Model, D. H. Lewis; third, Bessies Pride, D. H. Lewis; fourth, ———, Wm. Hoover; fifth, ———, Otto B. Schulze.

BERKSHIRE.

EXHIBITORS.

Dr. D. M. Trice, Charlottesville, Virginia; A. T. Doerr & Son, Harval, Illinois; C. S. Buckley, Holstein, Iowa; W. S. Corsa, White Hall, Illinois; C. J. Craig, Thorntown, Indiana; C. A. Evans, Elliott, Iowa; The Farmers Farm, Farmington, Minnesota; Wm. Lakings, Hurley, South Dakota; MacDonald Bros.; Montezuma, Iowa; Rookwood Farm, Ames, Iowa; Jas. Riley & Son, Thorntown, Indiana; Sheffield Farm, Glendale, Ohio; H. E. Woods, Palmyra, Iowa; G. T. Saum, Valley Junction, Iowa; Preston Stock Farm; T. F. Teal, Stockport, Iowa; E. H. Sharp, Leon, Iowa.

AWARDS.

Judge ....N. H. Gentry, Sedalia, Mo.
Wyman Lovejoy, Roscoe, Illinois.

Boar Two Years or Over—First, Julia's Duke, The Farmers Farm; second, Premier Chief 30, James Riley & Son; third, Premier Artist, H. E. Woods.

Boar Eighteen Months Under Two Years—First, Keystone Duke, W. S. Corsa; second, Hiram Abill, James Riley & Son.

Boar One Year, Under Eighteen Months—First, Master Pug, James Riley & Son; second, Rival's Champion Best, Rookwood Farm; third, Fearnot Masterpiece, W. S. Corsa; fourth, Star Duke IV, James Riley & Son; fifth, Robins Attractor, The Farmer Farm; sixth, Lord Lee E., C. A. Evans.

Boar Six Months, Under One Year—First, Superbus, W. S. Corsa; second, Wild Rose Lee Beauty, James Riley & Son; third, Lord Robin II, James Riley & Son; fourth, Robins Corrector, The Farmer Farm; fifth, Victor Warden, C. S. Buckley; sixth, Botnay Valley Premier, C. A. Evans; seventh, Young Duke of Cedar House, C. A. Evans.

Boar Under Six Months—First, W. S. Corsa; second, Valuable Star, James Riley & Son; third, The Farmers Farm; fourth, Invincible Ideal, James Riley & Son; fifth, ———, W. S. Corsa; sixth, ———, C. A. Evans; seventh, ———, H. E. Woods; eighth, ———, H. E. Woods.

Sow Two Years or Over—First, Mistress Peace, W. S. Corsa; second, Lady Combine III, James Riley & Son; third, Duke's Princess VIII, W. S. Corsa; fourth, Linden Lass IV, The Farmer Farm; fifth, Model Leader II, C. A. Evans; sixth, Miss Nonpariel, The Farmer Farm; seventh, Lassie, H. E. Woods; eighth, Amazing, C. A. Evans.

Sow Eighteen Months, Under Two Years—First, Lady Premier 101, Rookwood Farm; second, Masterpiece Handsome Lady, W. S. Corsa; third, Robins Premier Lady, James Riley & Son; fourth, Robin Premier Lady II, James Riley & Son; fifth, Premier Duchess 06, The Farmers Farm; sixth, Miss Vanity C. S. Buckley; seventh, Princess Varden, C. S. Buckley.

Sow One Year, Under Eighteen Months—First, Mistress Peace II, W. S. Corsa; second, Sweet Marie R, James Riley & Son; third, Royal Lady 59, James Riley & Son; fourth, Mistress Peace III, W. S. Corsa; fifth, Robins Lady C, The Farmer Farm; sixth, Sultans Royal Beauty III, O. C. Barber; seventh, Victoria Varden, C. S. Buckley; eighth, Robins Attractor II, The Farmers Farm.

Sow Six Months, Under One Year—Rival's Princess IV, W. S. Corsa; second, Golden Glory, James Riley & Son; third, Star's Belle X, James Riley & Son; fourth, Rival Princess II, W. S. Corsa; fifth, Robins Erma, The Farmer Farm; sixth, Robin's Erma A, The Farmer Farm; seventh, Bacon E's Girl X, O. C. Barber; eighth, Barton's Duchess, O .C. Barber.

Sow Under Six Months—First, Star's Empress IV, James Riley & Son; second, ———, W. S. Corsa; third, ———, James Riley & Son; fourth, ———, The Farmer Farm; fifth, ———, W. S. Corsa; sixth, ———, C. A. Evans; seventh, ———, C. A. Evans.

Junior Champion Boar—Superbus, W. S. Corsa.

Senior Champion Boar—Julia's Duke, The Farmer Farm.

Junior Champion Sow—Rival's Prince II, W. S. Corsa.

Senior Champion Sow—Mistress Peace, W. S. Corsa.

Grand Champion Boar—Julia's Duke, The Farmer Farm.

Grand Champion Sow—Mistress Peace, W. S. Corsa.

Boar and Three Sows Over One Year—First, W. S. Corsa; second, James Riley & Son; third, The Farmer Farm; fourth, The Farmer Farm; fifth, James Riley & Son; sixth, C. A. Evans.

Boar and Three Sows Under One Year—First, W. S. Corsa; second, James Riley & Son; third, The Farmer Farm; fourth, C. S. Buckley; fifth, C. A. Evans.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, W. S. Corsa; second, The Farmer Farm.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, W. S. Corsa; second, James Riley & Son; third, The Farmer Farm; fourth, C. S. Buckley; fifth, C. A. Evans.

Get of Sire—First, W. S. Corsa; second, James Riley & Son; third, W. S. Corsa; fourth, The Farmer Farm; fifth, The Farmer Farm; sixth, C. S. Buckley; seventh, C. A. Evans.

Produce of Sow—First, W. S. Corsa; second, James Riley & Son; third, The Farmer Farm; fourth, C. S. Buckley.

SPECIALS.

AMERICAN BERKSHIRE ASSN.

Best Herd of Berkshires, Under One Year Old—W. S. Corsa.

HAMPSHIRE.

EXHIBITORS.

Clare Brook, Washington, Iowa; W. J. Brinigar & Sons, Blythedale, Missouri; Willie Essig, Tipton, Indiana; J. R. Lawson, Ravenwood, Missouri; Geo. Lippert, Magnolia, Illinois; Clayton Messenger, Keswick, Iowa; L. C. Miller & Son, Canton, Illinois; Frank Morrell & Co., Niota, Illinois; C. M. Perrin, Mapleton, Iowa; G. C. Shaw, Tipton, Indiana; Mark Sharp, Coal Valley, Illinois.

AWARDS.

JUDGE ....WILSON ROWE, Ames, Ia.

Boar Two Years or Over—First, Colonel Brown, W. J. Brinigar; second, Wonderful, Mark Sharp; third, Blythedale Jim, Geo. Lippert; fourth, General Tipton, Willie Essig; fifth, Niota Longshot, Frank Morell & Co.; sixth, Captain Jack, Clayton Messenger.

Boar Eighteen Months, Under Two Years—First, Niota Dutchman, Frank Morell & Co.; second, Gold Bond, L. C. Miller & Son; third, Hoosier Prince, Willie Essig; fourth, Diagonal Duke, W. J. Brinigar; fifth, Iowa Top, Mark Sharp; sixth, General Allen 2d, C. M. Perrin.

Boar One Year, Under Eighteen Months—First, Orchardhill Duke, W. J. Brinigar & Sons; second, Bollman Merger, Mark Sharp; third, Compeer, Willie Essig; fourth, Morrell Perfection; fifth, Chiaska, Frank Morrell & Co.; sixth, Hawkeye King, C. M. Perrin.

Boar Six Months, Under One Year—First, Billy, Mark Sharp; second, General True, Willie Essig; third, Bacon King, W. J. Brinigar & Sons; fourth, Johnny Jay, Mark Sharp; fifth, Monsee, Willie Essig; sixth, George, Clayton Messenger.

Boar Under Six Months—First, Sharps Best, Mark Sharp; second, Hedgewood Boy, George Lippert; third, ———, Willie Essig; fourth, Morell's Pround, Frank Morrell & Co.; fifth, ———, Willie Essig; sixth, G. C. Shaw.

Sow Two Years, or Over—First, Merry Widows, Mark Sharp; second, Susan Jane, Geo. Lippert; third, Keswick Bell, Clayton Messenger; fourth, Lady Handsome, W. J. Brinigar & Sons; fifth, Pearl K, Willie Essig; sixth, Maud, W. J. Brinigar & Sons.

Sow Eighteen Months, Under Two Years—First, Favorite's Pet, Willie Essig; second, Tila, Mark Sharp; third, Edith, Clayton Messenger; fourth, Leona, Mark Sharp; fifth, Elmside Queen, Willie Essig; sixth, Blythedale Princess, W. J. Brinigar & Sons.

Sow One Year, Under Eighteen Months—First, Hetty Green 6th, Clayton Messenger; second, Miss Gay, Mark Sharp; third, Ervina Perfection, C. M. Perrin; fourth, Enchantress, Willie Essig; fifth, Niota Bell, Frank Morrell & Co.; sixth, Blythedale Diamond, W. J. Brinigar & Sons.

Sow Six Months, Under One Year—First, Maud, Mark Sharp; second, Lady Maud C., Geo. Lippert; third, Blythedale Mona, W. J. Brinigar & Son; fourth, Regal, Willie Essig; fifth, Pearl, Frank Morrell & Co.; sixth, Mabel, Mark Sharp.

Sow Under Six Months—First, Perrin's Beauty, C. M. Perrin; second, ———, Willie Essig; third, Bertha, C. M. Perrin; fourth, ———, Clayton Messenger; fifth, ———, Willie Essig; sixth, ———, Geo. Lippert.

Senior Champion Boar—Niota Dutchman, Frank Morrell & Co.

Junior Champion Boar—Billy, Mark Sharp.

Senior Champion Sow—Merry Widow, Mark Sharp.

Junior Champion Sow—Perrin's Beauty, C. M. Perrin.

Grand Champion Boar—Niota Dutchman, Frank Morrell & Co.

Grand Champion Sow—Merry Widow, Mark Sharp.

Boar and Three Sows Over One Year—First, Mark Sharp; second, Geo. Lippert; third, W. J. Brinigar & Sons; fourth, General Tipton, Willie Essig; fifth, Captain Jack, Clayton Messenger; sixth, Niota Dutchman, Frank Morrell & Co.

Boar and Three Sows Under One Year—First, Mark Sharp; second, Willie Essig; third, Willie Essig; fourth, Geo. Lippert; fifth, W. J. Brinigar & Sons; sixth, C M. Perrin.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, W. J. Brinigar & Sons; second, Compeer, Willie Essig; third, Iowa Top, Mark Sharp; fourth, Hawkeye King, C. M. Perrin.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Mark Sharp; second, Willie Essig; third, Willie Essig; fourth, Geo. Lippert; fifth, W. J. Brinigar & Sons; sixth, C. M. Perrin.

Get of Sire—First, Willie Essig; second, Mark Sharp; third, Willie Essig; fourth, W. J. Brinigar; fifth, Geo. Lippert; sixth, Clayton Messenger.

Produce of Sow—First, Mark Sharp; second, Willie Essig; third, Willie Essig; fourth, W. J. Brinigar & Son; fifth, Geo. Lippert; sixth, Clayton Messenger.

LARGE YORKSHIRE.

EXHIBITORS.

B. F. Davidson, Menlo, Iowa; Jones & Redman, Danville, Illinois; B. F. Kunkle, Redfield, Iowa; Wheeler Homestead, Kanona, N. Y.

AWARDS.

JUDGE ....WILSON ROWE, Ames, Ia.

Boar Two Years or Over—First, Deer Creek Beauty II, B. F. Davidson; second, Lake Park Corrector, B. F. Davidson; third, ———, Wheeler Homestead.

Boar Eighteen Months, Under Two Years—First, ———, The Wheeler Homestead.

Boar One Year, Under Eighteen Months—First, ———, B. F. Kunkle; second, ———, B. F. Davidson; third, ———, The Wheeler Homestead.

Boar Six Months, Under One Year—First, The Wheeler Homestead; second, B. F. Davidson; third, B. F. Kunkle; fourth, B. F. Kunkle.

Boar Under Six Months—First, B. F. Davidson; second, B. F. Davidson; third, B. F. Kunkle; fourth, The Wheeler Homestead.

Sow Two Years or Over—First, The Wheeler Homestead; second, B. F. Davidson; third, B. F. Davidson; fourth, The Wheeler Homestead; fifth, B. F. Kunkle.

Sow Eighteen Months, Under Two Years—First, The Wheeler Homestead; second, B. F. Kunkle.

Sow One Year, Under Eighteen Months—First, B. F. Davidson; second, The Wheeler Homestead; third, B. F. Davidson.

Sow Six Months, Under One Year—First, B. F. Davidson; second, B. F. Davidson; third, The Wheeler Homestead; fourth, B. F. Kunkle; fifth, B. F. Kunkle.

Sow Under Six Months—First, B. F. Davidson; second, B. F. Davidson; third, The Wheeler Homestead; fourth, The Wheeler Homestead; fifth, B. F. Kunkle.

Senior Champion Boar—B. F. Davidson.

Junior Champion Boar—B. F. Davidson.

Senior Champion Sow—The Wheeler Homestead.

Junior Champion Sow—B. F. Davidson.

Grand Champion Boar—B. F. Davidson.

Grand Champion Sow—The Wheeler Homestead.

Boar and Three Sows Over One Year—First, B. F. Davidson; second, The Wheeler Homestead.

Boar and Three Sows Under One Year—First, B. F. Davidson; second, The Wheeler Homestead; third, B. F. Kunkle.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, B. F. Davidson; second, The Wheeler Homestead.

Boar and Three Sows, Under One Year Bred by Exhibitor—First, B. F. Davidson; second, The Wheeler Homestead; third, B. F. Kunkle.

Get of Sire—First, B. F. Davidson; second, B. F. Kunkle.

Produce of Sow—B. F. Davidson; second, B. F. Kunkle.

SPECIALS.

AMERICAN YORKSHIRE CLUB.

Best Herd, Bred by Exhibitor—First, B. F. Davidson; second, The Wheeler Homestead.

TAMWORTH.

EXHIBITORS.

J. W. Justice & Sons, Kalona, Iowa; C. C. Roup, Iowa City, Iowa; Dr. E. A. Thomas, Kalona, Iowa.

AWARDS.

JUDGE ....WILSON ROWE, Ames, Iowa.

Boar Two Years or Over—First, Green Wood Leader, J. W. Justice & Sons; second, Springbrook Diamond, C. C. Roup; third, Duke Amber, J. W. Justice & Sons.

Boar Eighteen Months, Under Two Years—First, Alvin D. Miller, C. C. Roup.

Boar One Year Old, Under Eighteen Months—First, Rob Roy, C. C. Roup.

Boar Six Months, Under One Year—First, ———, J. W. Justice & Sons; second, Knoll Slope Baron, C. C. Roup; third, Greenwood Dan, J. W. Justice & Sons; fourth, ———, C. C. Roup.

Boar Under Six Months—First, ———, J. W. Justice & Sons; second, ———, C. C. Roup; third, ———, J. W. Justice & Sons; fourth, ———, Dr. E. A. Thomas.

Sow Two Years or Over—First, Knoll Slope Sulana IV, C. C. Roup; second, Lady Rose, J. W. Justice.

Sow Eighteen Months, Under Two Years—First, Mona, J. W. Justice & Sons; second, ———, C. C. Roup.

Sow One Year, Under Eighteen Months—First, Maplehurst Anna, C. C. Roup; second, ———, C. C. Roup; third, Greenwood Onward, J. W. Justice & Sons; fourth, ———, J. W. Justice & Sons.

Sow Six Months, Under One Year—First, ———, C. C. Roup; second, ———, Dr. E. A. Thomas; third, ———, J. W. Justice & Sons; fourth, ———, J. W. Justice & Sons; fifth, ———, Dr. E. A. Thomas.

Sow Under Six Months—First, ———, Dr. E. A. Thomas; second, ———, J. W. Justice & Sons; third, ———, C. C. Roup; fourth, ———, Dr. E. A. Thomas; fifth, ———, J. W. Justice & Sons.

Senior Champion Boar—Greenwood Leader, J. W. Justice & Sons.

Junior Champion Boar————, J. W. Justice & Sons.

Senior Champion Sow—Knoll Slope Sulana VI, C. C. Roup.

Junior Champion Sow————, C. C. Roup.

Grand Champion Boar—Greenwood Leader, J W. Justice & Sons.

Grand Champion Sow—Knoll Slope Sulana VI, C. C. Roup.

Boar and Three Sows Over One Year—First, ———, C. C. Roup; second, ———, J. W. Justice & Sons.

Boar and Three Sows, Under One Year—First, J. W. Justice & Sons; second, C. C. Roup; third, Dr. E. A. Thomas.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, J. W. Justice & Son.

Boar and Three Sows, Under One Year, Bred by Exhibitor—First, J. W. Justice & Son; second, C. C. Roup; third, Dr. E. A. Thomas.

Get of Sire—First, J. W. Justice & Sons; second, C. C. Roup; third, J. W. Justice & Sons.

Produce of Sow—First, J. W. Justice & Sons; second, C. C. Roup; third, J. W. Justice & Sons; fourth, Dr. E. A. Thomas.

SHEEP DEPARTMENT.

SUPERINTENDENT ....CHAS. ESCHER, JR., Botna, Iowa.

MERINOS, AMERICAN, SPANISH OR DELAINE.

EXHIBITORS.

A. J. Blakely, Grinnell, Iowa; Uriah Cook & Son, Peoria, Ohio.

AWARDS.

JUDGE ....J. E. WEBB.

Ram Two Years Old or Over—First and third, Uriah Cook & Son; second, A. J. Blakely.

Ram One Year Old and Under Two—First and second, Uriah Cook & Son; third, A. J. Blakely.

Ram Lamb—First and second, Uriah Cook & Son; third, A. J. Blakely.

Ewe Two Years Old or Over—First and second, Uriah Cook & Son; third, A. J. Blakely.

Ewe Lamb—First and second, Uriah Cook & Son; third, A. J. Blakely.

Champion Ram Any Age—First, Uriah Cook & Son.

Champion Ewe Any Age—First, Uriah Cook & Son.

Get of Sire—First, Uriah Cook & Son; second, A. J. Blakely.

Flock—Uriah Cook & Son; second, A. J. Blakely.

RAMBOUILLET.

EXHIBITORS.

A. J. Bates, Erwin, Ohio; F. S. King Bros. Co., Laramie, Wyoming; Robert Taylor, Abbott, Nebraska.

AWARDS.

JUDGE ....J. E. WEBB.

Ram Two Years Old or Over—First, and second, F. S. King Bros. Co.; third, A. A. Bates.

Ram One Year Old and Under Two—First, Robt. Taylor; second, F. S. King Bros. Co.; third, A. A. Bates.

Ram Lamb—First, A. A. Bates; second, Robt. Taylor; third, F. S. King Bros. Co.

Ewe Two Years Old or Over—First and third, F. S. King Bros. Co.; second, A. A. Bates.

Ewe One Year Old and Under Two—First and second, F. S. King Bros. Co.; third, A. A. Bates.

Ewe Lamb—First, Robt. Taylor; second and third, A. A. Bates.

Champion Ram Any Age—First, F. S. King Bros. Co.

Champion Ewe Any Age—First, F. S. King Bros. Co.

Get of Sire—First, A. A. Bates; second, Robt. Taylor.

Flock—First, F. S. King Bros. Co.; second, A. A .Bates.

COTSWOLDS.

EXHIBITORS.

F. W. Harding, Waukesha, Wisconsin; Lewis Bros., Camp Point, Illinois.

AWARDS.

JUDGE.....................C. H. WILLIAMS, Janesville, Mich.

Ram Two Years Old or Over—First and second, Lewis Bros.; third, F. W. Harding.

Ram One Year Old and Under Two—First and second, Lewis Bros.; third, F. W. Harding.

Ram Lamb—First and second, Lewis Bros.; third, F. W. Harding.

Ewe Two Years Old or Over—First and second, Lewis Bros.; third, F. W. Harding.

Ewe One Year Old and Under Two—First and second, Lewis Bros.; third, F. W. Harding.

Ewe Lamb—First and Second, Lewis Bros.; third, F. W. Harding.

Champion Ram Any Age—Lewis Bros.

Champion Ewe Any Age—Lewis Bros.

Get of Sire—First, Lewis Bros.

Flock—First, Lewis Bros.; second, F. W. Harding.

LEICESTERS.

EXHIBITORS.

Wm. Cooper & Nephews Co., Chicago, Illinois; Robert Taylor, Abbott, Nebraska.

AWARDS.

JUDGE.....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Robt. Taylor.

Ram One Year Old and Under Two—First and second, Robt. Taylor.

Ram Lamb—First and second, Robt. Taylor.

Ewe Two Years Old or Over—First and second, Robt. Taylor.

Ewe One Year Old and Under Two—First and second, Robt. Taylor.

Ewe Lamb—First and second, Robt. Taylor.

Champion Ram Any Age—Robt. Taylor.

Champion Ewe Any Age—Robt. Taylor.
Get of Sire—First, Robt. Taylor.
Flock—First, Robt. Taylor.

LINCOLN.

EXHIBITORS.

A. W. Arnold, Galesville, Wis.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First and second, A. W. Arnold.
Ram One Year Old and Under Two—First and second, A. W. Arnold.
Ram Lamb—First and second, A. W. Arnold.
Ewe Two Years Old or Over—First and second, A. W. Arnold.
Ewe One Year Old and Under Two—First and second, A. W. Arnold.
Ewe Lamb—First and second, A. W. Arnold.
Champion Ram Any Age—A. W. Arnold.
Champion Ewe Any Age—A. W. Arnold.
Get of Sire—First, A. W. Arnold.
Flock—First, A. W. Arnold.

HAMPSHIRE DOWNS.

EXHIBITORS.

Wm. Cooper Nephews Co., Chicago, Illinois; F. W. Harding, Waukesha, Wisconsin; Geo. McKerrow & Sons, Pewaukee, Wisconsin; W. F. Renk & Son, Sun Prairie, Wisconsin; Robt. Taylor, Abbott, Nebraska.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Wm. Cooper Nephews Co.; second, W. F. Renk & Son; third, Geo. McKerrow.

Ram One Year Old and Under Two—First, W. F. Renk & Son; second, Wm. Cooper Nephews Co.; third, W. F. Renk & Son.

Ram Lamb—First and second, W. F. Renk & Son; third, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First, W. F. Renk & Son; second and third, Wm. Cooper Nephews Co.

Ewe One Year Old and Under Two—First and second, W. F. Renk & Son; third, Wm. Cooper Nephews Co.

Ewe Lamb—First, W. F. Renk & Son; second and third, Geo. McKerrow & Sons.

Champion Ram Any Age—W. F. Renk & Son.
Champion Ewe Any Age—W. F. Renk & Son.
Get of Sire—First, Robt. Taylor.
Flock—First, W. F. Renk & Son; second, Wm. Cooper Nephews Co.

SHROPSHIRES.

EXHIBITORS.

E. L. Bitterman, Mason City; Chandler Bros., Chariton, Iowa; William Cooper Nephews Co., Chicago, Illinois; Uriah Cook & Son, Peoria, Ohio; Elmendorf Farm, Lexington, Kentucky; J. S. Fawcett & Son, Springdale, Iowa; Geo. McKerrow & Sons, Pewaukee, Wisconsin; O. H. Peasley & Son, Indianola, Iowa; W. F. Renk & Son, Sun Prairie, Wisconsin; W. A. Taylor & Son, Ames, Iowa.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Chandler Bros.; second, Elmendorf Farm; third, Chandler Bros.; fourth, W. F. Renk & Son.

Ram One Year Old and Under Two—First, Chandler Bros.; second, Geo. McKerrow & Sons; third, Wm. Cooper Nephews Co.; fourth, Geo. McKerrow & Sons.

Ram Lamb—First, Elmendorf Farm; second, Chandler Bros.; third, W. F. Renk & Son; fourth, Chandler Bros.

Ewe Two Years Old or Over—First, Wm. Cooper Nephews Co.; second, Elmendorf Farm; third, Geo. McKerrow & Sons; fourth, W. F. Renk & Son.

Ewe One Year Old and Under Two—First, Chandler Bros.; second, Uriah Cook & Son; third, Elmendorf Farm; fourth, Chandler Bros.

Ewe Lamb—First, Chandler Bros.; second, Chandler Bros.; third, Elmendorf Farm; fourth, Geo. McKerrow & Sons.

Champion Ram Any Age—Chandler Bros.

Champion Ewe Any Age—Chandler Bros.

Get of Sire—First, Chandler Bros.; second, O. H. Peasley & Son; third, J. S. Fawcett & Son.

Flock—First, Chandler Bros.; second, Elmendorf Farm; third, Wm. Cooper Nephews Co.

IOWA SHROPSHIRES.

EXHIBITORS.

E. L. Bitterman, Mason City, Iowa; Chandler Bros., Chariton, Iowa; J. S. Fawcett & Son, Springdale, Iowa; McAdoo & Brown, Indianola, Iowa; O. H. Peasley & Son, Indianola, Iowa; W. A. Taylor & Son, Ames, Iowa.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, J. S. Fawcett & Son; second, O. H. Peasley & Son; third, Chandler Bros.; fourth, E. L. Bitterman; fifth, E. L. Bitterman.

Ram One Year Old and Under Two—First, Chandler Bros.; second, J. S. Fawcett & Son; third, J. S. Fawcett & Son; fourth, E. L. Bitterman; fifth, W. A. Taylor & Son.

Ram Lamb—First, Chandler Bros.; second, E. L. Bitterman; third, McAdoo & Brown; fourth, J. S. Fawcett & Son; fifth, Chandler Bros.

Ewe Two Years Old or Over—First, Chandler Bros.; second, W. A. Taylor & Son; third, O. H. Peasley & Son; fourth, J. S. Fawcett & Son; fifth, W. A. Taylor & Son.

Ewe One Year Old and Under Two—First, Chandler Bros.; second, Chandler Bros.; third, O. H. Peasley & Son; fourth, O. H. Peasley & Son; fifth, E. L. Bitterman.

Ewe Lamb—First, Chandler Bros.; second, W. A. Taylor & Son; third, O. H. Peasley & Son; fourth, J. S. Fawcett & Son; fifth, E. L. Bitterman.

Champion Ram Any Age—Chandler Bros.

Get of Sire—First, O. H. Peasley & Son; second, J. S. Fawcett & Son; third, W. A. Taylor & Son.

Flock—First, Chandler Bros.; second, O. H. Peasley & Son; third, J. S. Fawcett & Son.

SPECIAL PREMIUMS OFFERED BY AMERICAN SHROPSHIRE REGISTRY ASSOCIATION.

AWARDS.

Ram Two Years Old or Over—First, J. S. Fawcett & Son; second, O. H. Peasley & Son; third, E. L. Bitterman.

Ram One Year Old and Under Two—First, E. L. Bitterman; second, Chandler Bros.; third, J. S. Fawcett & Son.

Ram Lamb—First, W. F. Renk & Son; second, Chandler Bros.; third, E. L. Bitterman.

Ewe Two Years Old or Over—First, Chandler Bros.; second, W. F. Renk & Son; third, J. A. Taylor.

Ewe One Year Old and Under Two—First, Chandler Bros.; second, Chandler Bros.; third, E. L. Bitterman.

Ewe Lamb—First, W. F. Renk & Son; second, Chandler Bros.; third, W. A. Taylor.

Champion Ram Any Age—E. L. Bitterman.

Champion Ewe Any Age—W. F. Renk & Son.

Get of Sire—First, Chandler Bros.; second, O. H. Peasley & Son; third, J. S. Fawcett & Son.

Flock—First, Chandler Bros.; second, O. H. Peasley; third, J. S. Fawcett & Son.

OXFORD DOWN.

EXHIBITORS.

Wm. Cooper Nephews Co., Chicago, Illinois; C. C. Croxen, Atalissa, Iowa; John Graham & Son, Eldora, Iowa; F. T. Lawton, West Liberty, Iowa; Geo. McKerrow & Sons, Pewaukee, Wisconsin.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Wm. Cooper Nephews Co.; second, Geo. McKerrow & Sons; third, John Graham & Son.

Ram One Year Old and Under Two—First, Geo. McKerrow & Sons; second, Wm. Cooper Nephews Co.; third, Wm. Cooper Nephews Co.

Ram Lamb—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons; third, Wm. Cooper Nephews Co.

Ewe Two Years Old or Over—First, Geo. McKerrow & Sons; second, Wm. Cooper Nephews Co.; third, Wm. Cooper Nephews Co.

Ewe One Year Old and Under Two—First, Wm. Cooper Nephews Co.; second, Geo. McKerrow & Sons; third, Wm. Cooper Nephews Co.

Ewe Lamb—First, Wm. Cooper Nephews Co.; second, Wm. Cooper Nephews Co.; third, Geo. McKerrow & Sons.

Champion Ram Any Age—Wm. Cooper Nephews Co.

Champion Ewe Any Age—Wm. Cooper Nephews Co.

Get of Sire—First, Jno. Graham & Son; second, F. T. Lawton.

Flock—First, Wm. Cooper Nephews Co.; second, Geo. McKerrow & Sons.

IOWA OXFORD DOWNS.

EXHIBITORS.

C. C. Croxen, Atalissa, Iowa; John Graham & Son, Eldora, Iowa; F. T. Lawton, West Liberty, Iowa.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, John Graham & Son.

Ram One Year Old and Under Two—First, John Graham & Son; second, John Graham & Son; third, F. T. Lawton.

Ram Lamb—First, F. T. Lawton; second, John Graham & Son; third, John Graham & Son.

Ewe Two Years Old or Over—First, C. C. Croxen; second, John Graham & Son; third, John Graham & Son.

Ewe One Year Old and Under Two—First, C. C. Croxen; second, John Graham & Son; third, John Graham & Son.

Ewe Lamb—First, John Graham & Son; second, John Graham & Son; third, F. T. Lawton.

Champion Ram Any Age—John Graham & Son.

Champion Ewe Any Age—C. C. Croxen.

Get of Sire—First, John Graham & Son; second, F. T. Lawton.

Flock—First, C. C. Croxen.

SPECIAL PRIZES BY AMERICAN OXFORD RECORD ASSOCIATION.

Best Yearling Ram—First and second, John Graham & Son.

Best Yearling Ewe—First, C. C. Croxen; second and third, John Graham & Son.

SOUTH DOWNS.

EXHIBITORS.

Wm. Cooper Nephews Co., Chicago, Illinois; Geo. McKerrow & Sons, Pewaukee, Wisconsin.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Wm. Cooper Nephews Co.; second, Geo. McKerrow.

Ram One Year Old and Under Two—First, Wm. Cooper Nephews Co.; second, Geo. McKerrow & Sons.

Ram Lamb—First and second, Wm. Cooper Nephews Co.; third, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First and second, Wm. Cooper Nephews Co.; third, Geo. McKerrow & Sons.

Ewe One Year Old and Under Two—First and second, Wm. Cooper Nephews Co.; third, Geo. McKerrow & Sons.

Ewe Lamb—First and second, Wm. Cooper Nephews Co.; third, Geo. McKerrow & Sons.

Champion Ram Any Age—Wm. Cooper Nephews Co.

Champion Ewe Any Age—Wm. Cooper Nephews Co.

Flock—First, Wm. Cooper Nephews Co.; second, Geo. McKerrow & Sons.

DORSET.

EXHIBITORS.

W. H. Miner, Chazy, New York; Nash Bros., Tipton, Indiana.

AWARDS.

JUDGE....................W. H. BEATTIE, Wilton Grove, Ont.

Ram Two Years Old or Over—First, Nash Bros.

Ram One Year Old and Under Two—First, W. H. Miner.

Ram Lamb—First and second, Nash Bros.

Ewe Two Years Old or Over—First, W. H. Miner; second, Nash Bros.

Ewe One Year Old and Under Two—First, W. H. Miner; second, Nash Bros.

Ewe Lamb—First, W. H. Miner; second and third, Nash Bros.

Champion Ram Any Age—W. H. Miner.

Champion Ewe Any Age—W. H. Miner.

Get of Sire—First, Nash Bros.

Flock—First, W. H. Miner; second, Nash Bros.

CHEVIOT.

EXHIBITORS.

A. W. Arnold, Galesville, Wisconsin; G. W. Parnell, Wingate, Missouri.

AWARDS.

JUDGE....................C. H. WILLIAMS, Janesville, Mich.

Ram Two Years Old or Over—First and second, G. W. Parnell; third, A. W. Arnold.

Ram One Year Old and Under Two—First and second, G. W. Parnell.

Ram Lamb—First and second, G. W. Parnell; third, A. W. Arnold.

Ewe Two Years Old or Over—First and second, G. W. Parnell; third, A. W. Arnold.

Ewe One Year Old and Under Two—First and second, G. W. Parnell; third, A. W. Arnold.

Ewe Lamb—First and second, G. W. Parnell; third, A. W. Arnold.

Champion Ram Any Age—G. W. Parnell.

Champion Ewe Any Age—G. W. Parnell.

Get of Sire—First, G. W. Parnell; second, A. W. Arnold.

Flock—First, G. W. Parnell; second, A. W. Arnold.

POULTRY DEPARTMENT.

SUPERINTENDENT.............CHAS. ESCHER JR., Botna, Iowa.

AMERICANS.

EXHIBITORS.

Jesse Alexander, Altoona, Iowa; A. L. Anderson, Indianola, Iowa; Don G. Berry, Indianola, Iowa; W. C. Bradshaw, Ogden, Iowa; Dr. Thos. P. Bond, Des Moines, Iowa; E. M. Cathcart, Charter Oak, Iowa; Wib. F. Clements, Agency, Iowa; J. H. Chandler, Des Moines, Iowa, R. F. D. No. 1; Mrs. J. H. Chandler, Des Moines, Iowa; Joseph Dagle, Richland, Iowa; Harry Eddingfield, Mt. Pleasant, Iowa; Carrie B. Farmer, Indianola, Iowa; F. M. Finkbine, Des Moines, Iowa; M. Finkenhagen, Ellsworth, Iowa; W. A. Hartman, Winterset, Iowa; A. and I. Hansen, Dean, Iowa; C. W. Howell, Des Moines, Iowa; F. H. Hollway, Lytton, Iowa; Peter Hove, Stanhope, Iowa; W. C. Jacobs, Knoxville, Iowa; F. W. Johnson, Luther, Iowa; A. J. Johnson, Des Moines, Iowa; H. B. Kelly, Wapello, Iowa; C. A. Kenworthy, Des Moines, Iowa; Sherman L. Kline, Scranton, Iowa; Minkel & Co., Mapleton, Minnesota; M. C. Miller, Des Moines, Iowa; Dr. W. A. Marner, Miles, Iowa; Dr. W. J. Mather, Lamoni, Iowa; Beatrice Mansfield, Altoona, Iowa, R. F. D. No. 2; Mrs. F. W. McIntyre, Red Oak, Iowa; Mrs. W. E. Newell, Altoona, Iowa; Tom Oxenfield, Marshalltown, Iowa; Lon Pollock, Afton, Iowa; S. H. Page, Waverly, Iowa; S. A. Powers & Son, Fairfield, Iowa; J. T. Perry, Selma, Iowa; Mrs. N. A. Ranck, Niota, Illinois; Walter F. Reppert, Burlington, Iowa; F. L. Reinhard & Son, Ottumwa, Iowa; H. H. Rich, Des Moines, Iowa; D. W. Rich, Mt. Pleasant, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; R. S. Salyard, Lamoni, Iowa; F. W. Stolt, Odebolt, Iowa; M. L. Seeley, Stuart, Iowa; W. M. Shaw & Co., Monroe, Iowa; A. Stocker, Des Moines, Iowa; J. S. Shannon, Sac City, Iowa; Clem Thompson, Hiteman, Iowa; W. F.

Volz, Cedar Rapids, Iowa; Warner & Sons, F. F., Bloomfield, Iowa; R. E. West, Altoona, Iowa; J. C. Watts, Berwick, Iowa; W. B. Wilson, Delta, Iowa; W. T. Wilkinson, E. Des Moines, Iowa.

AWARDS.

JUDGE ....F. H. SHELLABARGER, West Liberty, Iowa.

Barred Plymouth Rock Cock—First (140), J. S. Shannon; second, (205), F. L. Reinhard & Son; third, (171), S. H. Page.

Barred Plymouth Rock Cockerel—First, (4668), J. S. Shannon; second, (4652), J. S. Shannon; third, (2005), W. B. Wilson.

Barred Plymouth Rock Hen—First, (356), S. H. Page; second, E. G. Roberts; third, (10), Lon Pollock.

Barred Plymouth Rock Pullet—First, (369), S. H. Page; second, (56), E. M. Cathcart; third, (1419), S. H. Page.

White Plymouth Rock Cock—First, (1019), F. H. Hollway; second, (5337), F. H. Hollway; third, (15), E. G. Roberts.

White Plymouth Rock Cockerel—First, (1042), F. H. Hollway; second, (5514), F. H. Hollway; third, (3), W. T. Wilkinson.

White Plymouth Rock Hen—First, (2250), F. H. Hollway; second, (8429), F. H. Hollway; third, (7), M. L. Seeley.

White Plymouth Rock Pullet—First, (1605), F. H. Hollway; second, (1601), F. H. Hollway; third, E. G. Roberts.

Buff Plymouth Rock Cock—First, (203), H. H. Rich; second, (6), H. H. Rich; third, E. G. Roberts.

Buff Plymouth Rock Cockerel—First, (5), Jos. Dagle; second, (94), H. H. Rich; third, (193), R. S. Salyard.

Buff Plymouth Rock Hen—First, (190), R. S. Salyard; second, (95), H. H. Rich; third, (1), E. G. Roberts.

Buff Plymouth Rock Pullet—First, (99), Jos. Dagle; second, (194), R. S. Salyard; third, (193), R. S. Salyard.

Partridge Plymouth Rock Cock—First, Jas. Alexander.

Partridge Plymouth Rock Hen—First, Jas. Alexander; second, A. and I. Hansen.

Partridge Plymouth Rock Pullet—First, Jas. Alexander; second, Jas. Alexander; third, Jas. Alexander.

Silver Wyandotte Cock—First, (53), A. L. Anderson; second, (1548), E. G. Roberts; third, (17), F. W. Johnson.

Silver Wyandotte Cockerel—First, (3), Dr. W. A. Marner; second, (67), H. B. Kelly; third, (1), Dr. W. A. Marner.

Silver Wyandotte Hen—First, (401), E. G. Roberts; second, (653), F. F. Warner & Sons; third, (30), F. W. Johnson.

Silver Wyandotte Pullet—First, (4), Dr. W. A. Marner; second, (86), H. B. Kelly; third, (71), H. B. Kelly.

Golden Wyandotte Cock—First, E. G. Roberts; second, (1076), F. F. Warner & Sons; third, (80), A. L. Anderson.

Golden Wyandotte Cockerel—First, (97), A. L. Anderson; second, (892), F. F. Warner & Sons; third, (159), Carrie B. Farmer.

Golden Wyandotte Hen—First, (412), F. F. Warner & Sons; second, (89), A. L. Anderson; third, (83), E. G. Roberts.

Golden Wyandotte Pullet—First, (1419), F. F. Warner & Sons; second, (79), A. L. Anderson; third, (155), Carrie B. Farmer.

White Wyandotte Cock—First, (89), Beatrice Mansfield; second, (30), E. G. Roberts; third, (50), Dr. Thomas P. Bond.

White Wyandotte Cockerel—First, (27), Mrs. N. B. Ashby; second, (26), Mrs. N. B. Ashby; third, (62), A. Stocker.

White Wyandotte Hen—First, (908), E. G. Roberts; second, (27), Dr. Thomas P. Bond; third, (28), Dr. Thomas P. Bond.

White Wyandotte Pullet—First, (81), Beatrice Mansfield; second, (63), A. Stocker; third, (37), Mrs. N. B. Ashby.

Buff Wyandotte Cock—First, (56), S. A. Powers & Son; second, (143), A. L. Anderson; third, (30), A. L. Anderson.

Buff Wyandotte Cockerel—First, (51), A. L. Anderson; second, (74), A. L. Anderson.

Buff Wyandotte Hen—First, (45), S. A. Powers & Son; second, (65), A. L. Anderson; third, (71), A. L. Anderson.

Buff Wyandotte Pullet—First, (70), A. L. Anderson; second, (68), A. L. Anderson; third, E. G. Roberts.

Black Wyandotte Cock—First, E. G. Roberts.

Black Wyandotte Cockerel—First, E. G. Roberts.

Black Wyandotte Hen—First, E. G. Roberts.

Black Wyandotte Pullet—First, E. G. Roberts.

Partridge Wyandotte Cock—First, (5), Don G. Berry; second, (185), F. F. Warner & Sons; third, (20), F. W. Stolt.

Partridge Wyandotte Cockerel—First, (2), S. A. Powers & Son; second, (42), F. W. Stolt; third, (79), F. W. Johnson.

Partridge Wyandotte Hen—First, (77), F. W. Stolt; second, (156), Don G. Berry; third, (160), Don G. Berry.

Partridge Wyandotte Pullet—First, (90), F. W. Stolt; second, (150), Don G. Berry; third, (18), F. W. Johnson.

Silver Penciled Wyandotte Cock—First, F. F. Warner & Son; second, E. G. Roberts.

Silver Penciled Wyandotte Cockerel—First, F. F. Warner & Son.

Silver Penciled Wyandotte Hen—First, F. F. Warner & Sons; second, E. G. Roberts.

Silver Penciled Wyandotte Pullet—First, F. F. Warner & Sons.

Columbian Wyandotte Pullet—First, A. L. Anderson.

Black Java Cock—First, E. G. Roberts.

Black Java Cockerel—First, E. G. Roberts.

Black Java Hen—First, E. G. Roberts.

Black Java Pullet—First, E. G. Roberts.

Mottled Java Cock—First, E. G. Roberts.

Mottled Java Hen—First, E. G. Roberts; second, E. G. Roberts.

Rose Comb Domminique Cock—First, E. G. Roberts; second, E. G. Roberts.

R. C. Domminique Cockerel—First, E. G. Roberts; second, E. G. Roberts.

R. C. Domminique Hen—First, E. G. Roberts; second, E. G. Roberts.

R. C. Domminique Pullet—First, E. G. Roberts; second, E. G. Roberts.

S. C. Rhode Island Red Cock—First, (7981), F. M. Finkbine; second, (11), F. L. Reinhard & Son; third, (1), M. C. Miller.

S. C. Rhode Island Red Cockerel—First, (59), Mrs. F. W. McIntyre; second, (4), Elliott Purmort; third, (31), M. C. Miller.

S. C. Rhode Island Red Hen—First, (51), E. G. Roberts; second, (26), Elliott Purmort; third, (2), Wib. F. Clements.

S. C. Rhode Island Red Pullet—First, (7), Mrs. F. W. McIntyre; second, (81), M. Finkenhagen; third, (24), Wib. F. Clements.

R. C. Rhode Island Red Cock—First, (60), D. W. Rich; second, (44), W. C. Jacobs; third, (59), W. C. Jacobs.

R. C. Rhode Island Red Cockerel—First, (265), C. W. Howell; second, (39), Tom Oxenfield; third, (187), Tom Oxenfield.

R. C. Rhode Island Red Hen—First, (36), Mrs. N. A. Ranck; second, (41), D. W. Rich; third, (1), W. T. Volz.

R. C. Rhode Island Red Pullet—First, (3), W. F. Volz; second, (284), C. W. Howell; third, (50), Tom Oxenfield.

ASIATICS.

EXHIBITORS.

E. L. Beck, Des Moines, Iowa; Weir Hart, Bondurant, Iowa; A. & I. Hansen, Dean, Iowa; F. W. Johnson, Luther, Iowa; Robert Lundberg, Altoona, Iowa, R. F. D. No. 1; Minkel & Company, Mapleton, Minnesota; E. G. Roberts, Ft. Atkinson, Wisconsin; R. E. West, Altoona, Iowa; T. H. West, Mitchellville, Iowa.

AWARDS.

Light Brahma Cock—First, (402), Weir Hart; second, (72), E. G. Roberts.

Light Brahma Cockerel—First, (85), Weir Hart; second, (187), F. W. Johnson; third, (91), Weir Hart.

Light Brahma Hen—First, (63), E. L. Beck; second, (87), Weir Hart; third, (222), E. L. Beck.

Light Brahma Pullet—First, (26), Weir Hart; second, (94), Weir Hart; third, (241), F. W. Johnson.

Dark Brahma Cock—First, E. G. Roberts; second, Minkel & Co.; third, A. & I. Hansen.

Dark Brahma Cockerel—First, A. & I. Hansen; second, A. & I. Hansen.

Dark Brahma Hen—First, E. G. Roberts; second, Minkel & Co.; third, A. & I. Hansen.

Buff Cochin Cock—First, E. G. Roberts.

Buff Cochin Cockerel—First, E. G. Roberts.

Buff Cochin Hen—First, E. G. Roberts; second, F. W. Johnson.

Buff Cochin Pullet—First, E. G. Roberts; second, E. G. Roberts.

Partridge Cochin Cock—First, E. G. Roberts; second, Robt. Lundberg.

Partridge Cochin Cockerel—First, E. G. Roberts.

Partridge Cochin Hen—First, E. G. Roberts; second, (12), Robt. Lundberg; third, (11), Robt. Lundberg.

White Cochin Hen—First, E. G. Roberts.

Black Cochin Cock—First, E. G. Roberts.

Black Cochin Hen—First, E. G. Roberts.

Black Langshan Cock—First, E. G. Roberts; second, R. E. West.

Black Langshan Cockerel—First, (55), R. E. West; second, (68), R. E. West; third, E. G. Roberts.

White Langshan Cock—First, (29), T. H. West; second, (43), T. H. West.

White Langshan Cockerels—First, (19), Weir Hart; second, (66), Weir Hart; third, (44), T. H. West.

White Langshan Hen—First, (6), T. H. West; second, (59), Weir Hart; third, (1), T. H. West.

White Langshan Pullet—First, (19), Weir Hart; second, (60), Weir Hart; third, (30), T. H. West.

MEDITERRANEAN.

EXHIBITORS.

E. L. Beck, Des Moines, Iowa; George B. Ferris, Grand Rapids, Michigan; F. M. Finkbine, Des Moines, Iowa; William Harvey, Des Moines, Iowa; Charles E. Hines, Des Moines, Iowa, Station A; F. C. Hollister, Fairfield, Iowa; A. & I. Hansen, Dean, Iowa; F. W. Johnson, Luther, Iowa; Lucas Ellwyn, Des Moines, Iowa; Will Michael, Selma, Iowa; Mrs. W. E. Newell, Altoona, Iowa; P. W. Pitt, Belle Plaine, Iowa; W. Patterson, Carlisle, Iowa; T. J. Perry, Selma, Iowa; Mrs. N. A. Ranck, Niota, Illinois; E. G. Roberts, Ft. Atkinson, Wisconsin; A. Stocker, Des Moines, Iowa; Elem Thompson, Hiteman, Iowa.

AWARDS.

S. C. Brown Leghorn Cock—First, (91), F. C. Hollister; second, E. G. Roberts; third, F. C. Hollister.

S. C. Brown Leghorn Cockerel—First, (24), W. Patterson; second, (18), W. Patterson; third, (23), Will Michael.

S. C. Brown Leghorn Hen—First, (47), F. C. Hollister; second, E. G. Roberts; third, (81), P. W. Pitt.

S. C. Brown Leghorn Pullet—First, (15), W. Patterson; second, (14), P. W. Pitt; third, (18), Will Michael.

R. C. Brown Leghorn Cock—First, E. G. Roberts; second, J. T. Perry; third, Mrs. W. E. Newell.

R. C. Brown Leghorn Cockerel—First, (50), J. T. Perry.

R. C. Brown Leghorn Hen—First, E. G. Roberts.

R. C. Brown Leghorn Pullet—First, (113743), J. T. Perry; second, (113735), J. T. Perry.

S. C. White Leghorn Cock—First, (P 8720), Geo. B. Ferris; second, E. G. Roberts; third, (66), A. Stocker.

S. C. White Leghorn Cockerel—First, (P 8716), Geo. B. Ferris; second, (52), A. Stocker; third, (59), A. Stocker.

S. C. White Leghorn Hen—First, (N. 7673), Geo. B. Ferris; second, E. G. Roberts; third, F. M. Finkbine.

S. C. White Leghorn Pullet—First, (76665), Geo. B. Ferris; second, (265), Wm. Harvey; third, (67), A. Stocker.

R. C. White Leghorn Cock—First, E. G. Roberts.

R. C. White Leghorn Cockerel—First, E. L. Beck; second, E. G. Roberts.

R. C. White Leghorn Hen—First, E. G. Roberts.

R. C. White Leghorn Pullet—First, E. L. Beck; second, E. G. Roberts.

S. C. Buff Leghorn Cock—First, (48), Chas. E. Hines; second, (93), Chas. E. Hines; third, E. G. Roberts.

S. C. Buff Leghorn Cockerel—First, (104), Chas. E. Hines; second, (732), Chas. E. Hines; third, (101), Chas. E. Hines.

S. C. Buff Leghorn Hen—First, (14), Chas. E. Hines; second, (28), A. & I. Hansen; third, (44), E. G. Roberts.

S. C. Buff Leghorn Pullet—First, (108), Chas. E. Hines; second, (732), Chas. E. Hines; third, (109), Chas. E. Hines.

S. C. Black Leghorn Cock—First, E. G. Roberts.

S. C. Black Leghorn Cockerel—First, E. G. Roberts.

S. C. Black Leghorn Hen—First, E. G. Roberts.

S. C. Black Leghorn Pullet—First, E. G. Roberts.

S. C. Black Minorca Cock—First, E. C. Roberts.

S. C. Black Minorca Cockerel—First, E. G. Roberts.

S. C. Black Minorca Hen—First, E. G. Roberts.

S. C. Black Minorca Pullet—First, E. G. Roberts.

R. C. Black Minorca Cock—First, E. G. Roberts.

R. C. Black Minorca Cockerel—First, E. G. Roberts.

R. C. Black Minorca Hen—First, E. G. Roberts.

R. C. Black Minorca Pullet—First, E. G. Roberts.

S. C. White Minorca Cock—First, E. G. Roberts.

S. C. White Minorca Hen—First, E. G. Roberts.

White Faced Black Spanish Cock—First, E. G. Roberts.

White Faced Black Spanish Cockerel—First, A. & I. Hansen.

White Faced Black Spanish Hen—First, E. G. Roberts; second, (92), A. & I. Hansen; third, (49), A. & I. Hansen.

Blue Andalusian Cock—First, E. G. Roberts.

Blue Andalusian Cockerel—First, E. G. Roberts.

Blue Andalusian Hen—First, E. G. Roberts.

Blue Andalusian Pullet—First, E. G. Roberts.

Mottled Ancona Cock—First, E. G. Roberts.

Mottled Ancona Cockerel—First, A. & I. Hansen; second, E. G. Roberts.

Mottled Ancona Hen—First, E. G. Roberts; second, A. & I. Hansen.

Mottled Ancona Pullet—First, A. & I. Hansen; second, E. G. Roberts.

ENGLISH.

EXHIBITORS.

D. W. Boydston, Nevada, Iowa; Charles Brackenburg, Lamoni, Iowa; A. P. Chamberlain, Des Moines; J. L. Crawford, Winterset, Iowa; O. H. Davis, Dundee, Iowa; Dr. M. M. Evans, LeGrand, Iowa; Homer Farrar, Axtell, Kansas; C. M. Hummer, Keswick, Iowa; J. E. T. Johnson, Gowrie, Iowa; C. A. Mackey, Nevada, Iowa; A. H. Retsloff, Wabasha, Minnesota; E. G. Roberts, Ft. Atkinson, Wisconsin; W. B. Wilson, Delta, Iowa.

AWARDS.

White Dorking Cock—First, E. G. Roberts.

White Dorking Hen—First, E. G. Roberts.

Silver Gray Dorking Cock—First, E. G. Roberts.

Silver Gray Dorking Hen—First, E. G. Roberts.

Silver Gray Dorking Pullet—First, E. G. Roberts.

Colored Dorking Cock—First, E. G. Roberts.

Colored Dorking Cockerel—First, E. G. Roberts.

Colored Dorking Hen—First, E. G. Roberts.

Colored Dorking Pullet—First, E. G. Roberts.

R. C. Red Cap Cock—First, E. G. Roberts.

R. C. Red Cap Cockerel—First, E. G. Roberts.

R. C. Red Cap Hen—First, E. G. Roberts.

R. C. Red Cap Pullet—First, E. G. Roberts.

S. C. Buff Orpington Cock—First, E. G. Roberts.

S. C. Buff Orpington Cockerel—First, (21), W. D. Boydston; second, (98), J. L. Crawford; third, (40), O. H. Davis.

S. C. Buff Orpington Hen—First, (354), Dr. M. M. Evans; second, (312), Dr. M. M. Evans; third, (38), E. G. Roberts.

S. C. Buff Orpington Pullet—First, (502), Homer Farrar; second, (503), Homer Farrar; third, (55), Chas. Brackenburg.

S. C. Black Orpington Cock—First, (49), E. G. Roberts; second, (11), C. W. Reeder; third, (21), A. P. Chamberlain.

S. C. Black Orpington Cockerel—First, (214), A. P. Chamberlain; second, E. G. Roberts; third, (65), A. P. Chamberlain.

S. C. Black Orpington Hen—First, (207), C. W. Reeder; second, (122), J. E. T. Johnson; third, (63), E. G. Roberts.

S. C. Black Orpington Pullet—First, (81), A. P. Chamberlain; second, (243), A. P. Chamberlain; third, (1135), J. E. T. Johnson.

S. C. White Orpington Cock—First, (17), C. M. Hummer.

S. C. White Orpington Cockerel—First, (217), C. W. Reeder; second, (198), C. A. Mackey; third, (22), A. H. Retsloff.

S. C. White Orpington Hen—First, (223), Dr. M. M. Evans; second, (59), A. H. Retsloff; third, (209), C. W. Reeder.

S. C. White Orpington Pullet—First, (12), C. A. Mackey; second, (21), C. A. Mackey; third, (297), W. B. Wilson.

POLISH.

EXHIBITORS.

E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

W. C. B. Polish Cock—First, E. G. Roberts.
W. C. B. Polish Cockerel—First, E. G. Roberts.
W. C. B. Polish Hen—First, E. G. Roberts.
W. C. B. Polish Pullets—First, E. G. Roberts.
Bearded Golden Polish Cock—First and second, E. G. Roberts.
Bearded Golden Polish Cockerel—First, E. G. Roberts.
Bearded Golden Polish Hen—First and second, E. G. Roberts.
Bearded Golden Polish Pullet—First, E. G. Roberts.
Bearded Silver Polish Cock—First and second, E. G. Roberts.
Bearded Silver Polish Cockerel—First and second, E. G. Roberts.
Bearded Silver Polish Hen—First and second, E. G. Roberts.
Bearded Silver Polish Pullet—First and second, E. G. Roberts.
Bearded White Polish Cock—First, E. G. Roberts.
Bearded White Polish Hen—First and second, E. G. Roberts.
Buff Laced Polish Cock—First, E. G. Roberts.
Buff Laced Polish Cockerel—First and second, E. G. Roberts.
Buff Laced Polish Hen—First and second, E. G. Roberts.
Buff Laced Polish Pullet—First and second, E. G. Roberts.
Non-Bearded Golden Polish Cock—First and second, E. G. Roberts.
Non-Bearded Golden Polish Cockerel—First and second, E. G. Roberts.
Non-Bearded Golden Polish Hen—First and second, E. G. Roberts.
Non-Bearded Golden Polish Pullet—First and second, E. G. Roberts.
Non-Bearded Silver Polish Cock—First and second, E. G. Roberts.
Non-Bearded Silver Polish Cockerel—First and second, E. G. Roberts.
Non-Bearded Silver Polish Hen—First and second, E. G. Roberts.
Non-Bearded Silver Polish Pullet—First, E. G. Roberts.
Non-Bearded White Polish Cock—First, E. G. Roberts.
Non-Bearded White Polish Hen—First, E. G. Roberts.
Non-Bearded White Polish Pullet—First, E. G. Roberts.

DUTCH.

EXHIBITORS.

E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

G. S. Hamburg Cock—First, E. G. Roberts.
G. S. Hamburg Hen—First, E. G. Roberts.
Silver Spangled Hamburg Cock—First, E. G. Roberts.
Silver Spangled Hamburg Hen—First, E. G. Roberts.
Golden Penciled Hamburg Cockerel—First and second, E. G. Roberts.
Golden Penciled Hamburg Hen—First and second, E. G. Roberts.

Golden Penciled Hamburg Pullet—First and second, E. G. Roberts.

Silver Penciled Hamburg Cock—First, E. G. Roberts.

Silver Penciled Hamburg Cockerel—First, E. G. Roberts.

Silver Penciled Hamburg Hen—First and second, E. G. Roberts.

Silver Penciled Hamburg Pullet—First, E. G. Roberts.

White Hamburg Cock—First, E. G. Roberts.

White Hamburg Hen—First, E. G. Roberts.

Black Hamburg Cock—First, E. G. Roberts.

Black Hamburg Cockerel—First, E. G. Roberts.

Black Hamburg Hen—First, E. G. Roberts.

Black Hamburg Pullet—First, E. G. Roberts.

FRENCH.

EXHIBITORS.

A. & I. Hansen, Dean, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

Mottled Houdan Cock—First, E. G. Roberts; second, (80), E. G. Roberts; third, (91), A. & I. Hansen.

Mottled Houdan Cockerel—First and second, E. G. Roberts.

Mottled Houdan Hen—First and second, E. G. Roberts; third, (60), A. & I. Hansen.

Mottled Houdan Pullet—First and second; E. G. Roberts; third, A. & I. Hansen.

Black Crevecoeur Cock—First, E. G. Roberts.

Black Crevecoeur Hen—First, E. G. Roberts.

Black La Fleche Cock—First, E. G. Roberts.

Black La Fleche Cockerel—First, E. G. Roberts.

Black La Fleche Hen—First, E. G. Roberts.

Black La Fleche Pullet—First, E. G. Roberts.

GAMES AND GAME BANTAMS.

EXHIBITORS.

E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

B. B. Red Game Cock—First, E. G. Roberts.

B. B. Red Game Cockerel—First, E. G. Roberts.

B. B. Red Game Hen—First and second, E. G. Roberts.

B. B. Red Game Pullet—First, E. G. Roberts.

Golden Duckwing Game Cock—First, E. G. Roberts.

Golden Duckwing Game Hen—First, E. G. Roberts.

Silver Duckwing Game Cock—First, E. G. Roberts.

Birchen Game Cock—First, E. G. Roberts.

Birchen Game Hen—First, E. G. Roberts.

Red Pyle Game Cock—First, E. G. Roberts.

Red Pyle Game Hen—First and second, E. G. Roberts.
Red Pyle Game Pullet—First, E. G. Roberts.
White Game Cockerel—First, E. G. Roberts.
White Game Hen—First, E. G. Roberts.
Black Game Hen—First, E. G. Roberts.
B. B. Red Game Bantam Cock—First, E. G. Roberts.
B. B. Red Game Bantam Cockerel—First and second, E. G. Roberts.
B. B. Red Game Bantam Hen—First, E. G. Roberts.
B. B. Red Game Bantam Pullet—First and second, E. G. Roberts.
Brown Red Game Bantam Cock—First, E. G. Roberts.
Brown Red Game Bantam Cockerel—First, E. G. Roberts.
Brown Red Game Bantam Hen—First and second, E. G. Roberts.
Brown Red Game Bantam Pullet—First and second, E. G. Roberts.
Golden Duckwing Game Bantam Cock—First, E. G. Roberts.
Golden Duckwing Game Bantam Cockerel—First, E. G. Roberts.
Golden Duckwing Game Bantam Hen—First, E. G. Roberts.
Silver Duckwing Game Bantam Cock—First, E. G. Roberts.
Silver Duckwing Game Bantam Hen—First, E. G. Roberts.
Birchen Game Bantam Cock—First, E. G. Roberts.
Birchen Game Bantam Cockerel—First and second, E. G. Roberts.
Birchen Game Bantam Hen—First and second, E. G. Roberts.
Birchen Game Bantam Pullet—First and second, E. G. Roberts.
Red Pyle Game Bantam Cock—First and second, E. G. Roberts.
Red Pyle Game Bantam Cockerel—First, E. G. Roberts.
Red Pyle Game Bantam Hen—First and second, E. G. Roberts.
Red Pyle Game Bantam Pullet—First and second, E. G. Roberts.
White Game Bantam Cock—First, E. G. Roberts.
White Game Bantam Hen—First, E. B. Roberts.
Black Game Bantam Hen—First, E. G. Roberts.

ORIENTAL GAMES AND BANTAMS.

EXHIBITORS.

A. & I. Hansen, Dean, Iowa; F. L. Reinhard & Son, Ottumwa, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

White Indian Game Hen—First, E. G. Roberts; second and third, F. L. Reinhard & Son.

Black Sumatra Cock—First, E. G. Roberts.
Black Sumatra Cockerel—First, E. G. Roberts.
Black Sumatra Hen—First, E. G. Roberts.
Black Sumatra Pullet—First, E. G. Roberts.
B. B. Red Malay Cockerel—First, A. & I. Hansen.
B. B. Red Malay Hen—First, A. & I. Hanson.
B. B. Red Malay Pullet—First, A. & I. Hansen.

ORIENTAL GAMES AND BANTAMS.

EXHIBITORS.

E. L. Beck, Des Moines, Iowa; Lester M. Collins, Des Moines, Iowa; A. & I. Hansen, Dean, Iowa; Peter Hove, Stanhope, Iowa; Will Michael, Selma, Iowa; Minkel & Co., Mapleton, Minnesota; M. C. Miller, Des Moines, F. L. Reinhard & Son, Ottumwa, Iowa; H. H. Rich, Des Moines, Iowa; T. H. West, Mitchellville, Iowa; R. E. West, Altoona, Iowa.

AWARDS.

Golden Seabright Cock—First, E. G. Roberts.

Golden Seabright Cockerel—First, E. G. Roberts.

Golden Seabright Hen—First, E. G. Roberts.

Golden Seabright Pullet—First, E. G. Roberts.

Silver Seabright Cock—First and second, E. G. Roberts; third, A. & I. Hansen.

Silver Seabright Cockerel—First, A. & I. Hansen; second, E. G. Roberts.

Silver Seabright Hen—First, E. G. Roberts; second, A. & I. Hansen.

White Rose Comb Cock—First and second, E. G. Roberts.

White Rose Comb Cockerel—First; E. G. Roberts.

White Rose Comb Hen—First, E. G. Roberts.

White Rose Comb Pullet—First, E. G. Roberts.

Black Rose Comb Cock—First and second, E. G. Roberts.

Black Rose Comb Cockerel—First and second, E. G. Roberts.

Black Rose Comb Hen—First and second, E. G. Roberts.

Black Rose Comb Pullet—First, E. G. Roberts.

White Booted Cock—First and second, E. G. Roberts.

White Booted Cockerel—First, E. G. Roberts.

White Booted Hen—First and second, E. G. Roberts.

White Booted Pullet—First, E. G. Roberts.

Light Brahma Cock—First, E. G. Roberts.

Light Brahma Cockerel—First, E. G. Roberts.

Light Brahma Hen—First, E. G. Roberts.

Light Brahma Pullet—First, E. G. Roberts.

Buff Cochin Bantam Cock—First, E. G. Roberts; second, (14), T. H. West; third, (2), Lester M. Collins.

Buff Cochin Bantam Cockerel—First, (47), Lester M. Collins; second, (90), H. H. Rich; third, (37), Lester M. Collins.

Buff Cochin Bantam Hen—First, (76), E. L. Beck; second, (113717), Will Michael; third, E. G. Roberts.

Buff Cochin Bantam Pullet—First, (1), Edwin Rosengren; second, E. G. Roberts; third, (78), R. E. West.

Partridge Cochin Bantam Cock—First, E. G. Roberts.

Partridge Cochin Bantam Hen—First, E. G. Roberts.

Partridge Cochin Bantam Pullet—First, E. G. Roberts.

White Cochin Bantam Cock—First, R. E. West; second, E. G. Roberts.

White Cochin Bantam Cockerel—First and second, E. G. Roberts.

White Cochin Bantam Hen—First, R. E. West; second, E. G. Roberts.

White Cochin Bantam Pullet—First and second, E. G. Roberts; third, R. E. West.

Black Cochin Bantam Cock—First, R. E. West; second and third, E. G. Roberts.

Black Cochin Bantam Cockerel—First and second, E. G. Roberts.

Black Cochin Bantam Hen—First, T. H. West; second, E. G. Roberts; third, R. E. West.

Black Cochin Bantam Pullet—First and second, E. G. Roberts.

B. T. Japanese Cock—First, E. G. Roberts; second and third, A. & I. Hansen.

B. T. Japanese Cockerel—First and second, E. G. Roberts.

B. T. Japanese Hen—First, E. G. Roberts; second, A. & I. Hansen.

B. T. Japanese Pullet—First, A. & I. Hansen; second and third, E. G. Roberts.

White Japanese Cock—First, E. G. Roberts.

White Japanese Cockerel—First, E. G. Roberts.

White Japanese Hen—First, E. G. Roberts.

White Japanese Pullet—First, E. G. Roberts.

Black Japanese Hen—First, E. G. Roberts.

Bearded White Polish Cock—First, E. G. Roberts.

Bearded White Polish Hen—First, E. G. Roberts.

White Silkie Cock—First, E. G. Roberts.

White Sultan Cock—First, E. G. Roberts.

White Sulton Hen—First, E. G. Roberts.

MISCELLANEOUS.

EXHIBITORS.

E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

Any Color Frizzles Cock—First, E. G. Roberts.

Any Color Frizzles Cockerel—First, E. G. Roberts.

Any Color Frizzles Hen—First, E. G. Roberts.

Any Color Frizzles Pullet—First, E. G. Roberts.

CAPONS.

EXHIBITORS.

A. & I. Hansen, Dean, Iowa.

AWARDS.

Any Variety Capons—First, second and third, A. & I. Hansen.

EXHIBITION PENS.

AWARDS.

Barred Plymouth Rock Fowls—First, J. S. Shannon; second, S. H. Page; third, W. A. Hartman.

Barred Plymouth Rock Chicks—First, E. M. Cathcart; second, J. S. Shannon; third, S. H. Page.

Buff Plymouth Rock Fowls—First and second, H. H. Rich.

Buff Plymouth Rock Chicks—First, Joseph Dagle; second, Peter Hove; third, H. H. Rich.

White Plymouth Rock Fowls—First and second, F. H. Hollway; third, W. T. Wilkinson.

White Plymouth Rock Chicks—First and second, F. H. Hollway; third, W. T. Wilkinson.

Silver Wyandotte Fowls—First, F. F. Warner & Sons; second, Martin Hauge.

Silver Wyandotte Chicks—First, F. F. Warner & Sons; second, A. L. Anderson; third, Walter Reppert.

Golden Wyandotte Fowls—First, F. F. Warner & Sons; second, A. L. Anderson.

Golden Wyandotte Chicks—First, A. L. Anderson; second, F. F. Warner & Sons.

White Wyandotte Fowls—First, Dr. Thos. P. Bond.

White Wyandotte Chicks—First, Beatrice Mansfield; second, Beatrice Mansfield; third, Dr. Thos. P. Bond.

Buff Wyandotte Fowls—First, A. L. Anderson.

Buff Wyandotte Chicks—First, A. L. Anderson.

Partridge Wyandotte Fowls—First, Don G. Berry.

Partridge Wyandotte Chicks—First, F. W. Stolt; second, Don G. Berry.

R. C. Rhode Island Red Fowls—First, D. W. Rich; second, W. C. Jacobs; third, W. F. Clements.

R. C. Rhode Island Red Chicks—First, D. W. Rich; second, Wib F. Clements; third, D. W. Rich.

S. C. Rhode Island Red Fowls—First, Mrs. F. W. McIntyre; second, W. F. Clements.

S. C. Rhode Island Red Chirks—First, W. H. Curry; second, C. A. Kenworthy; third, W. F. Clements.

Light Brahma Fowls—First, Weir Hart.

Light Brahma Chicks—First, Weir Hart.

Buff Cochin Chicks—First, F. W. Johnson.

Buff Orpington Fowls—First, J. L. Crawford.

Buff Orpington Chicks—First, J. L. Crawford; second, Chas. Brackenburg.

Black Langshan Fowls—First, R. E. West.

Black Langshan Chicks—First, R. E. West.

S. C. White Leghorn Fowls—First, W. M. Shaw & Co.

S. C. White Leghorn Chicks—First, Geo. B. Ferris; second, Chas. Herkner; third, Wm. Harvey.

R. C. White Leghorn Chicks—First, E. L. Beck.

S. C. Brown Leghorn Fowls—First, W. Patterson.

S. C. Brown Leghorn Chicks—First, W. Patterson; second, P. W. Pitt; third, F. C. Hollister.

PIGEONS.

EXHIBITORS.

Wib. F. Clements, Agency, Iowa; A. E. Walker, Des Moines, Iowa.

AWARDS.

Pair Homing Pigeons—First, second and third, A. E. Walker.

Pair Swallow Pigeons—First and second, Wib. F. Clements.

TURKEYS.

EXHIBITORS.

R. H. Longworth, Polk City, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin; W. M. Shaw & Co., Monroe, Iowa; F. F. Warner & Sons, Bloomfield, Iowa; J. C. Watts, Berwick, Iowa.

AWARDS.

Bronze Turkey Cock—First, J. C. Watts.

Bronze Turkey Cockerel—First and second, F. F. Warner & Sons; third, J. C. Watts.

Bronze Turkey Hen—First and second, F. F. Warner & Sons.

Bronze Turkey Pullet—First, F. F. Warner & Sons.

Narragansett Turkey Cock—First, E. G. Roberts.

Narragansett Turkey Cockerel—First, E. G. Roberts.

Narragansett Turkey Hen—First, E. G. Roberts.

Buff Turkey Cock—First, E. G. Roberts.

Buff Turkey Cockerel—First, E. G. Roberts.

Buff Turkey Hen—First, E. G. Roberts.

Buff Turkey Pullet—First, E. G. Roberts.

White Turkey Cock—First, R. H. Longworth.

White Turkey Cockerel—First, E. G. Roberts; second, R. H. Longworth; third, W. M. Shaw & Co.

White Turkey Hen—First, W. M. Shaw & Co.; second, W. M. Shaw & Co.; third, R. H. Longworth.

DUCKS.

EXHIBITORS.

Wib. F. Clements, Agency, Iowa; Carrie B. Farmer, Indianola, Iowa; Weir Hart, Bondurant, Iowa; A. & I. Hansen, Dean, Iowa; J. T. Perry, Selma, Iowa; A. B. McKeag, Montezuma, Iowa; Minkel & Co., Mapleton, Minnesota; F. F. Warner & Sons, Bloomfield, Iowa; F. L. Reinhard, Ottumwa, Iowa.

AWARDS.

White Pekin Drake, Old—First, F. F. Warner & Sons; second, E. G. Roberts; third, A. B. McKeag.

White Pekin Drake, Young—First, F. F. Warner & Sons; second, J. T. Perry.

White Pekin Duck, Old—First, F. F. Warner & Sons; second, E. G. Roberts; third, J. T. Perry.

White Pekin Duck, Young—First, F. F. Warner & Sons; second, J. T. Perry.

White Aylesburg Drake, Old—First, E. G. Roberts.

White Aylesbury Drake, Young—First, E. G. Roberts.

White Aylesbury Duck, Old—First, E. G. Roberts.

White Aylesbury Duck, Young—First, E. G. Roberts.

Colored Rouen Drake, Old—First, E. G. Roberts; second, A. & I. Hansen; third, Minkel & Co.

Colored Rouen Drake, Young—First, E. G. Roberts; second, Minkel & Co.; third, A. & I. Hansen.

Colored Rouen Duck, Old—First, E. G. Roberts; second, A. & I. Hansen; third, Minkel & Co.

Colored Rouen Duck, Young—First, Minkel & Co.; second, E. G. Roberts.

Black Cayuga Drake, Old—First, E. G. Roberts.

Black Cayuga Drake, Young—First, E. G. Roberts.

Black Cayuga Duck, Old—First, E. G. Roberts.

Black Cayuga Duck, Young—First, E. G. Roberts.

Gray Call Drake, Old—First and second, E. G. Roberts.

Gray Call Drake, Young—First and second, E. G. Roberts.

Gray Call Duck, Old—First and second, E. G. Roberts.

Gray Call Duck, Young—First and second, E. G. Roberts.

White Call Drake, Old—First, E. G. Roberts.

White Call Duck, Old—First, E. G. Roberts.

Black East India Drake, Old—First, E. G. Roberts.

Black East India Duck, Old—First, E. G. Roberts.

White Crested Drake, Old—First and second, E. G. Roberts.

White Crested Duck, Old—First and second, E. G. Roberts.

Colored Muscovy Drake, Old—First, E. G. Roberts.

Colored Muscovy Drake, Young—First, E. G. Roberts.

Colored Muscovy Duck, Old—First, E. G. Roberts.

Colored Muscovy Duck, Young—First, E. G. Roberts.

White Muscovy Drake, Old—First, E. G. Roberts.

White Muscovy Drake, Young—First, E. G. Roberts.

White Muscovy Duck, Old—First, E. G. Roberts.

White Muscovy Duck, Young—First, E. G. Roberts.

Indian Runner Drake, Old—First, E. G. Roberts; second and third, F. L. Reinhard.

Indian Runner Drake, Young—First and second, F. L. Reinhard; third, E. G. Roberts.

Indian Runner Duck, Old—First and second, F. L. Reinhard; third, Wib. F. Clements.

Indian Runner Duck, Young—First, E. G. Roberts; second, F. L. Reinhard & Son; third, Wib. F. Clements.

Blue Swedish Drake, Old—First, E. G. Roberts.

Blue Swedish Duck, Old—First and second, E. G. Roberts.

GEESE.

EXHIBITORS.

Carrie B. Farmer, Indianola, Iowa; Weir Hart, Bondurant, Iowa; A. B. McKeag, Montezuma, Iowa; W. M. Shaw & Co., Monroe, Iowa; F. L. Reinhard, Ottumwa, Iowa; E. G. Roberts, Ft. Atkinson, Wisconsin.

AWARDS.

White Embden Gander, Old—First, E. G. Roberts; second, W. M. Shaw & Co.; third, F. L. Reinhard & Son.

White Embden Gander, Young—First, E. G. Roberts; second, F. L. Reinhard & Son; third, F. L. Reinhard & Son.

White Embden Goose, Old—First, E. G. Roberts; second, F. L. Reinhard; third, W. M. Shaw & Co.

White Embden Goose, Young—First, E. G. Roberts; second, F. L. Reinhard; third, Carrie B. Farmer.

Gray African Gander, Old—First, E. G. Roberts.

Gray African Gander, Young—First, E. G. Roberts.

Gray African Goose, Old—First, E. G. Roberts.

Gray African Goose, Young—First, E. G. Roberts.

Brown Chinese Gander, Old—First, E. G. Roberts.

Brown Chinese Gander, Young—First, E. G. Roberts.

Brown Chinese Goose, Old—First, E. G. Roberts.

Brown Chinese Goose, Young—First, E. G. Roberts.

White Chinese Gander, Old—First, E. G. Roberts.

White Chinese Gander, Young—First, E. G. Roberts.

White Chinese Goose, Old—First, E. G. Roberts.

White Chinese Goose, Young—First, E. G. Roberts.

Gray Toulouse Gander, Old—First, E. G. Roberts; second, A. B. McKeag; third, W. M. Shaw & Co.

Gray Toulouse Gander, Young—First, E. G. Roberts; second, A. B. McKeag; third, Weir Hart.

Gray Toulouse Gander, Old—First, E. G. Roberts; second, A. B. McKeag; third, W. M. Shaw & Co.

Gray Toulouse Goose, Young—First, E. G. Roberts; second, A. B. McKeag; third, Weir Hart.

REPORT OF BOYS' JUDGING CONTEST

Number	Name	Poland China Swine		Duroc Jersey Swine		Shorthorn Cattle		Hereford Cattle		Percheron Horses		Shire Horses		R. Y. Dent Corn		Silver Mine Corn		Ear of Corn	Live Stock—Totals	Corn—Totals	Grand totals	Rank
		Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasans 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Placing 60	Reasons 40	Points				
1	Harley Walker	40	34	55	36	58	34	50	30	50	15	50	30	52	35	56	36	----	482	179	661	1
2	Ryle S. McKee	40	24	48	28	60	25	60	30	60	24	40	22	53	38	57	38	5	461	191	652	2
3	C. Frank Chandler	40	36	50	32	58	36	45	34	50	26	30	30	54	32	50	33	------	467	169	636	3
4	Lonnie Freeman	40	36	60	30	58	25	60	22	52	26	30	20	54	37	51	35	------	459	177	636	4
5	Ben Hilfman	50	30	50	32	45	15	53	33	50	28	48	30	47	36	58	30	------	464	171	635	5
6	L. C. Shivers	60	20	60	20	58	20	45	22	60	18	50	15	64	35	55	37	------	448	181	629	6
7	Bert C. Holmes	25	30	46	32	58	25	45	25	50	25	50	28	48	30	55	32	------	439	165	604	7
8	Floyd Soseman	58	20	50	26	52	20	40	25	37	25	50	20	55	34	55	35	------	423	179	602	8
9	Geo. F. Feazell	40	20	50	34	58	29	60	38	48	30	50	30	42	33	30	34	------	457	139	596	9
10	Frank H. Bliss	60	32	46	22	40	30	42	22	20	20	50	20	54	34	55	33	15	404	191	595	10
11	Austin A. Dowell	15	25	50	34	30	30	45	35	60	34	40	30	36	31	59	38	------	428	164	592	11
12	Ivan Peters	25	30	50	22	58	32	45	35	40	30	30	30	48	33	45	33	------	432	159	591	12
13	Frank Bresford	25	25	50	30	60	38	45	25	15	15	50	28	53	33	54	34	------	406	174	580	13
14	Given C. Johnson	50	24	50	26	40	30	45	28	35	26	40	22	50	34	48	31	------	416	163	579	41
15	Lester Smith	60	20	46	28	40	25	40	20	25	15	50	20	41	36	54	38	------	409	169	578	15
16	Lawrence Roberts	60	24	50	27	30	20	45	25	50	20	40	12	59	31	51	30	------	403	171	574	16
17	Harral A. Longworth	60	34	38	24	35	25	30	30	60	30	20	18	48	33	53	31	------	404	165	569	17
18	Henry S. Heidman	50	28	60	28	20	10	45	20	40	20	35	15	54	34	50	33	------	391	171	562	18
19	Roy S. McWhorte	60	20	20	18	40	25	40	23	40	25	60	18	55	31	48	30	------	389	164	553	19
20	Glen Hagen	40	20	50	20	40	10	45	25	35	15	50	20	51	33	52	34	10	370	180	550	20
21	Seth Canine	50	15	50	20	58	15	45	20	35	22	40	20	48	34	39	36	------	390	157	547	21
22	Hugh Bracelin	40	20	60	26	40	12	60	36	35	26	22	30	18	34	51	33	------	407	136	543	22
23	Ernest Schroeder	50	30	50	28	20	18	42	28	30	28	30	25	45	32	51	34	------	379	162	541	23
24	Benj. Coxen	5	10	48	28	58	22	60	30	35	22	20	18	55	37	51	37	------	356	180	536	24
25	Roy Westley	15	20	50	34	30	25	45	34	28	24	20	30	54	36	55	36	------	355	181	536	25
26	A. R. Patience	40	24	40	28	58	32	45	18	35	20	10	30	36	34	55	28	------	380	153	533	26
27	Bloss B. Metier	36	20	28	15	60	25	45	26	52	20	50	18	33	32	36	28	------	395	129	524	27
28	Frank Hoover	16	20	50	27	58	30	40	29	22	24	40	20	36	33	45	33	------	376	147	523	28
29	Chester Boniwell	60	30	40	20	15	20	60	28	32	20	20	25	39	33	54	34	------	350	160	510	29
30	Henry M. Menough	25	28	28	24	30	20	45	32	37	23	15	34	55	34	39	32	------	341	160	501	30
31	Roy Jacobs	20	15	35	20	25	15	17	15	45	20	60	15	56	32	50	32	------	302	170	472	31
32	John Connel	20	12	26	22	25	25	------	------	60	20	35	28	54	33	54	33	------	273	174	447	32
33	Frank Bronson	18	12	40	24	15	10	40	20	20	18	10	25	45	33	55	35	------	252	168	410	33
34	Clarence Shoyer	20	20	40	20	40	10	45	15	15	5	60	10	------	------	------	------	------	300	------	300	34
35	Loyd E. Hudson	20	25	60	24	20	15	45	20	------	------	------	------	------	------	------	------	------	229	------	229	35
36	Geo. Desenberg	40	24	50	20	------	------	------	------	------	------	------	------	------	------	------	------	------	134	------	134	36
37	Ross Dickey	46	25	28	10	------	------	------	------	------	------	------	------	------	------	------	------	------	109	------	109	37
38	Eugene Freeman	15	15	20	15	------	------	------	------	------	------	------	------	------	------	------	------	------	65	------	65	38

PART XIII

REPORT OF AGRICULTURAL CONDITIONS

BY

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES IN IOWA

1910

ADAIR.

FRED D. MARTIN, GREENFIELD, OCTOBER 24, 1910.

General Condition of Crops and Season—The general condition is unusually good. The season has been good at all times with the exception of a dry spell at the time the corn was sprouting.

Corn—Large acreage; larger yield than usual; first class quality and all well matured. Runs from thirty to seventy-five bushels per acre.

Oats—Extra good; best yield in several years. Oats were heavy, of good color and ran from twenty-five to sixty bushels per acre.

Wheat—Extra good yield for this county; running from twenty to forty bushels per acre and of A-1 quality.

Rye—Don't know of any rye raised in this county.

Barley—Good quality; good acreage, and yielded from thirty to forty bushels per acre.

Flax—None raised.

Buckwheat—Very little raised, but what there is looks very good.

Millet—Very little raised; don't know of any this year.

Sorghum—Acreage small but quality extra good.

Timothy—Extra good but not heavy; was well filled and yielded from four to seven bushels of seed per acre.

Clover—Light crop, the new seeding being the best. None threshed yet.

Prairie Hay—very little left, with the exception of sloughs, which were good and heavy with tame hay mixed in them.

Other Grains and Grasses—None.

Potatoes—Early ones were good; late ones not so good; yield from seventy-five to one hundred twenty-five bushels per acre.

Vegetables—All kinds very good.

Apples—Absolute failure.

Other Fruits—One-half crop grapes; no peaches or pears; one-half crop raspberries and blackberries; strawberries good.

Cattle—Have done fine on the pasture all summer. I believe there is a little shortage of stockers.

Horses—Have done fine; lots of them in the county and prices have been good. The raising of good horses seems to be on the increase.

Swine—Light stock of young pigs; prices have been so high that they were sold off close.

Sheep—Have been gaining and lots of them have been shipped in the county.

Poultry—Have done fine; lots of them being raised and the interest in breeding poultry is on the increase.

Bees—Have not done well this year.

Drainage—Lots of tiling being put in in this county.

Other Industries—The people are putting up a few silos and more are talking of it. There was a good deal of corn cut this year.

Lands—Still on the increase. Have sold 200 acres at $175.00 per acre and 200 acres at $150.00 per acre, adjoining this town; other lands in proportion. People are taking better care of their farms. Not nearly as much land has changed hands this year as usual on account of the money market.

Report of Fair—The fair was held September 20, 21 and 22, 1910. Had the best exhibits we have ever had; the horses being exceptionally good, while the hogs, sheep and poultry were also very good. Cattle were a little light. It rained hard the last day of the fair and this hurt the fair financially. Had a very good day the 21st and had extra good racing and free attractions.

ADAMS.

GEORGE E. BLISS, CORNING, SEPTEMBER 22, 1910.

General Condition of Crops and Season—Good.

Corn—Notwithstanding the dry weather in August, we had the best crop of corn we have had in three years.

Oats—Were of fine quality and averaged nearly forty bushels per acre.

Wheat—Winter wheat was a surprise to every one, yielding from eighteen to thirty-three bushels per acre. Spring wheat yielded from ten to twenty-four bushels per acre.

Rye—Quality good; yield close to nineteen bushels per acre, but not much grown in this county.

Barley—But very little sown, but of good quality and yielding about twenty-nine bushels per acre.

Flax—None raised in this county.

Buckwheat—Only a few small fields in the county, but this bids fair to produce well.

Millet—Hay short, but of fine quality.

Sorghum—Looks well at the present time but is a little green and may get frosted.

Timothy—Very light but of good quality and put up without being rained on.

Clover—The acreage was small but the yield was good. All was put in the barn in fine condition.

Prairie Hay—Short but like timothy it was put up in such fine condition that it will be valuable feed.

Other Grains and Grasses—Considerable speltz is raised but it is not very salable. Most of it is soaked and fed to the hogs.

Potatoes—Early potatoes are almost a failure on account of the drought and blight but the late ones promise well.

Vegetables—We had the best show of vegetables at our fair that we have ever had; both as to quality and quantity.

Apples—Absolutely none in this county; all buds killed by the freeze.

Other Fruits—Very light crop of raspberries, plums, cherries and blackberries. Grapes were of excellent quality and about 60 per cent of a crop.

Cattle—Cattle have been thin on account of the short pastures. However, late rains have improved the pastures and cattle are putting on flesh.

Horses—Are in fine condition and are being bred up in the purple class. Some very fine young stock has been produced.

Swine—While scarce, they are in excellent health and unusually growthy.

Sheep—Have done well this year and would be kept by more farmers if the dogs would let them alone.

Poultry—This has been a good year to raise chicks and young turkeys because of the dry weather, which prevented lice and mites.

Bees—A fair season for bees and about the average amount of honey.

Drainage—More tile put in than any previous year. The benefits are so apparent that "He who runs may read."

Other Industries—Cement blocks are manufactured, mostly for foundations under buildings.

Lands—While not changing hands to any great extent the increase is steady and sure.

Report of Fair—Held September 12-15, inclusive. The best showing was made in all departments that has been made in years. The damp and cold first day and the rainy last day left us with a small debt on our hands. All premiums are paid in full, however.

ALLAMAKEE.

A. C. LARSON, WAUKON, OCTOBER 25, 1910.

General Conditions of Crops and Season—Warm and dry.

Corn—Good.

Oats—Good.

Wheat—Good.

Rye—Good

Barley—Good.

Flax—Poor crop.

Buckwheat—Poor

Millet—Light crop.

Sorghum—Fair

Timothy—Light crop on old meadows.

Clover—Fair.

Potatoes—Good yield, late growth, and may not keep good.

Vegetables—Good.

Apples—None.

Other Fruits—Poor.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Fair.

Drainage—Good.

Other Industries—Good.

Lands—Advancing in value.

Report of Fair—Held September 20-23, inclusive.

AUDUBON.

S. C. CURTIS, AUDUBON, OCTOBER 8, 1910.

General Condition of Crops and Season—Season was very favorable for corn and small grains. Crops were good.

Corn—One of the best crops we have had for years, both as to quality and quantity.

Oats—Good crop; extra good quality.

Wheat—One of the best crops we have had for a number of years; averaging about forty bushels per acre.

Rye—Very little rye, if any, raised in this county.

Barley—Very good

Flax—None raised.

Millet—What there is is very heavy.

Sorghum—None to speak of raised.

Timothy—Timothy hay crop was short on account of dry weather during the summer months.

Clover—Clover was short crop also on account of dry summer months.

Prairie Hay—Very little prairie hay.

Potatoes—Fair.

Vegetables—Good.

Apples—Very few apples raised this year.

Other Fruits—Scarce, on account of late freezes in the spring.

Cattle—Very plentiful but hardly think there will be as many fed this winter as usual.

Horses—Raised very extensively and are of a heavy draft grade.

Swine—Raised very extensively and are of the well bred kind.

Sheep—More sheep are being raised every year.

Poultry—The poultry and egg business is quite extensive; bringing a great amount of money to the county every year.

Bees—Very few bees.

Drainage—Good natural drainage in the county.

Other Industries—Few industries outside of farming and stock raising. We have a canning factory which canned over a million cans of corn this year.

Lands—Are of black loam soil with a good clay sub-soil, the best there is for farming.

Report of Fair—The fair this year was very good and would have been one of the best ever held had the weather not been rainy. We had good exhibits, especially of corn and hogs. The dates for our fair were September 13-16, inclusive.

BENTON.

H. G. KRUSE, VINTON, OCTOBER 14, 1910.

Corn—Slightly below the average yield, due to the drouth during July and August.

Oats—Yield and quality excellent; best we have had in years.

Wheat—Fairly good yield but very little grown in the county.

Rye—Excellent.

Barley—Excellent.

Flax—None grown.

Buckwheat—None grown.

Millet—None grown.

Sorghum—Quality excellent; yield about two-thirds of a crop. The shortage being due to drouth.

Timothy—Light yield on account of drouth.

Clover—Light yield on account of drouth.

Prairie Hay—Drouth caused light yield.

Potatoes—Light yield on account of drouth.

Vegetable—Fair.

Apples—Light crop on account of early frost.

Other Fruits—Very light crop.

Cattle—Supply lighter than for years. Much stock was moved during the drouth.

Horses—Supply normal; draft variety improving in quality.

Swine—Supply large but not quite up to this month last year.

Sheep—Quite a large number of sheep being sent in for feeding purposes. Not many bred in this county.

Poultry—Quality getting better and the flocks are apparently larger this year than ever.

Bees—Fewer than for many years; many were winter killed.

Drainage—Constant improvement in drainage. Lots of tile being put in each year and more open ditches.

Other Industries—Improving.

Lands—Constantly increasing in price.

Report of Fair—Held September 6-9, inclusive. Attendance largest in history of the fair. Stock exhibits especially good.

BLACK HAWK.

F. E. HOYT, LAPORTE CITY, OCTOBER 24, 1910.

General Condition of Crops and Season—Good.

Corn—Good quality; yield about forty-five bushels per acre.

Oats—Good quality; yield about forty-five bushels per acre.

Wheat—Good; yield about twenty-five bushels per acre; acreage limited.

Rye—Acreage limited; fair yield, about twenty bushels per acre.

Barley—Quality good; yield about forty bushels per acre.

Flax—None raised.

Timothy—Light crop.

Clover—Good.

Potatoes—Fair crop.

Vegetables—Good.

Apples—None.

Other Fruits—Strawberries good; other fruits very scarce.

Cattle—Good; county fairly well supplied.

Horses—Good; very great number of colts raised this year.

Swine—Good; great many young pigs and very little disease prevailing.

Sheep—Very limited number of sheep in this vicinity.

Poultry—Plenty.

Bees—Limited.

Drainage—Much drain tile put in this season.

Other Industries—None except canning factory.

Lands—Farm lands increasing rapidly in price.

Report of Fair—Held September 27-30, inclusive. Attendance poor; weather good; display one of the best we have ever had.

BREMER.

E. C. BENNETT, WAVERLY, OCTOBER 24, 1910.

General Condition of Crops and Season—The spring was cold and backward. There were no June rains, and except in limited spots a drouth commencing in May lasted until August 17. Grass suffered severely but crops of grain were good.

Corn—About forty bushels per acre for field corn. About 75 per cent of the sweet corn was grown in the eastern half of the county and 25 per cent in the western.

Oats—An average crop; yielding from twenty to sixty-five bushels per acre.

Wheat—None grown.

Rye—Average crop but only a little grown.

Barley—One hundred per cent of a crop.

Flax—None grown.

Buckwheat—None grown.

Millet—Very little grown; yield 50 per cent.

Sorghum—But little grown; 100 per cent of a crop.

Timothy—Was injured by the drouth and the yield was only one-half ton per acre.

Clover—Yield light; about one-half ton per acre, except on last years sowing, where it averaged one and one-half tons.

Prairie Hay—Practically a failure.

Potatoes—The crop is light except in spots favored by local showers.

Vegetables—Gardens suffered severely from the dry weather but where they were well tended the quality was good and the yield more than half a crop.

Apples—Not over 10 per cent of a crop.

Other Fruits—Plums a total failure; but few cherries or small fruits; strawberries a half a crop.

Cattle—In good connition. More than the usual number were marketed during July and August on account of the short pastures.

Horses—A drop of about 20 per cent in price from the former high scale. Colts sell well and we have about the usual number.

Swine—Seventy-five per cent of a crop and in good condition.

Sheep—But few in the county.

Poultry—One hundred per cent of a crop and healthy.

Bees—No honey because of the drouth.

Drainage—Steadily increasing.

Other Industries—Sugar beets a good crop. Price $5.00 per ton at shipping points and $6.00 per ton to farmers who deliver at factory in the county.

Lands—Have advanced in value from 10 to 20 per cent. Sales, $65.00 to $145.00 per acre.

Report of Fair—Held September 20-23, inclusive. The fair was highly successful from a financial standpoint in spite of hard rains the last two days. Nearly every class in the catalog was represented and the buildings were overflowed. There were entered 100 horses, 136 cattle, over 200 hogs, and the poultry show was large. $200.00 in premiums brought out nine entries in the milking contest, dairy being a feature this year. Concessions were meagre, but clean; attendance good. Improvements this year cost over $5,000.00.

BOONE.

W. C. TRELOAR, OGDEN, OCTOBER 5, 1910.

General Condition of Crops and Season—Good corn and oat crop this season; weather was too dry for hay and potatoes.

Corn—Quality of corn good, yield also good.

Oats—Good quality; averaging from forty to sixty bushels per acre.

Wheat—Good but not much raised.

Rye—No rye raised.

Barley—None raised.

Flax—None raised.

Buckwheat—No buckwheat raised.

Millet—Some millet raised; crop good.

Sorghum—None raised.

Timothy—About one-half crop.

Clover—About one-half crop.

Prairie Hay—None.

Potatoes—Poor crop.

Vegetables—Poor crop.

Apples—Poor crop.

Other Fruits—Poor.

Cattle—Good many cattle and in good condition.

Horses—Good.

Swine—Good crop and doing fine.

Sheep—Very few Sheep.

Poultry—Good.

Bees—Not many bees.

Drainage—Lots of tiling.

Other Industries—Improving fast; new coal mines, etc.

Lands—Selling from $100.00 to $150.00 per acre.

Report of Fair—Held September 7-9, inclusive. Had good attendance and we did a fair business.

BOONE.

A. M. BURNSIDE, BOONE, SEPTEMBER 28, 1910.

General Condition of Crops and Season—All crops have done well for a dry season. The soil was in splendid condition when the crops were put in.

Corn—Good quality, but the average yield will be decreased on account of poor seed when planted. Poor stands in some places.

Oats—Good yield and weight running from thirty-two to forty pounds to the bushel.

Wheat—Not much raised but what there is is of good quality and yield.

Rye—Very little raised but that is of good quality.

Barley—Good quality but not much raised.

Flax—None sown.

Buckwheat—None sown.

Millet—Very little sown.

Sorghum—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—Very little grown; short on account of drouth.

Other Grains and Grasses—Late pastures good.

Potatoes—Small crop on account of dry weather.

Vegetables—Good yield of all kinds.

Apples—None raised; killed by late frosts in the spring.

Other Fruits—Very little other fruit.

Cattle—Many good herds; farmers are buying pure breds to head their herds. Herefords and Aberdeen Angus being the leading breeds.

Horses—A good demand for heavy horses and a number of draft horses are being raised.

Swine—In a healthy condition and a large number being raised. Duroc Jersey predominating.

Sheep—Very few raised but of high grade.

Poultry—Large numbers raised and they demand good prices.

Bees—Bee culture carried on on a small scale.

Drainage—New drains being established at each session of the board of supervisors. Over 100 county drains were put in the past seven years.

Other Industries—Good.

Report of Fair—Held September 13-15, inclusive. There were larger and better exhibits than ever before. The attendance was good but the last day was postponed until Friday, the 16th, on account of rains. The weather was still unfavorable Friday and all races and attractions were declared off.

BUCHANAN.

P. G. FREEMAN, INDEPENDENCE, OCTOBER 29, 1910.

General Condition of Crops and Season—Very dry up to the middle of August. Local showers during the spring and summer prevented a severe drouth. Some localities in the county show more drouth than others.

Corn—Excellent quality and the average yield for the county it fully 60 per cent of a full yield.

Oats—Good quality with fully an average yield.

Wheat—Quality and yield good; but very little raised.

Rye—Not much raised in this county but was a good crop so far as reported.

Barley—An average crop.

Flax—None raised.

Buckwheat—Very little raised in this locality.

Millet—Very little raised but what there is will be an average crop.

Sorghum—Light crop; very good.

Timothy—Seventy-five per cent of an average crop. The dry spring did much to shorten this crop.

Clover—Eighty per cent of an average crop.

Prairie Hay—Usually on low wet lands in this locality and the crop this year is of very good quality on account of the dry season.

Potatoes—Very poor; almost a failure on account of the drouth and potato bugs. The yield will be about 25 per cent of a full crop.

Vegetables—Good; 75 per cent of a good yield.

Apples—Nearly a failure.

Other Fruits—Short crops, owing to dry season. Fifty per cent of a crop of strawberries but other kinds might class as a failure.

Cattle—About the usual number but rather thin in flesh, owing to the dry season which affected the pastures more visibly than any other part of the farms.

Horses—High priced and scarce. About the usual number of colts are being raised as the high prices stimulate the interest in breeding horses.

Swine—Good quality but the farmers are not raising so many as they would if feed were cheaper. There is very little sickness this season.

Sheep—There are more of them in this locality than formerly. Many of the farmers have added small flocks to their farms and seem to feel they are good property.

Poultry—Fully up to the average; the high price of eggs stimulates the raising of poultry.

Bees—On account of the poor season there is no surplus of honey in this locality.

Drainage—More tiling done than ever and it is beginning to show good results.

Other Industries—Good.

Lands—Lands have been changing hands in this locality quite freely; selling from $80.00 to $125.00 per acre.

Report of Fair—Held August 23-26, inclusive. There was a large increased attendance over last year; exhibits were larger and better and the fair, on the whole, was a success.

BUENA VISTA.

C. H. WEGERSLEV, ALTA, SEPTEMBER, 1910.

General Condition of Crops and Season—The general condition of crops in Buena Vista county for the year 1910 was most encouraging to the farmer. A backward, cold, spring was succeeded by a dry, hot summer. Timely showers matured all field crops and the yield of small grain was superior to that of the average year. The corn crop is still an unknown fact at this time, but every indication points to a good yield of excellent quality. If rain had come a week earlier in the critical time of the corn crop the yield would have been much better. In the northeast part of this county there is much low and flat land and this has been an ideal year for prosecuting farm work in that section.

Wheat—Little wheat is raised in the county, but the yield and quality was good.

Rye—Small acreage but good yield.

Barley—A fair acreage and good yield.

Flax—No flax raised in the county.

Buckwheat—None raised as far as I know.

Millet—A fair yield and small acreage.

Sorghum—Good stand and quality, but small acreage.

Clover—Good stand and excellent quality of hay, but the yield of seed was not large, owing to dry weather at the time of "heading out" of crop.

Prairie Hay—Little raised, but of short yield.

Other Grains and Grasses—The oat crop was of excellent quality and yield; the best in several years.

Potatoes—This crop turned out well; the yield being from 200 to 400 bushels an acre. The late planted potatoes were of superior quality; owing to a dry season they were smooth and free from rot and spots.

Vegetable—All garden products did well and the quantity raised was of excellent quality.

Apples—None raised; owing to a spring freeze when the trees were in blossom.

Other Fruits—No other fruits were raised for the same reason.

Cattle—Owing to the shortness of pastures the cattle did not do so well as usual. The milk supply was also light for the same reason.

Horses—A good price and steady demand. Foreign buyers keep the county drained of good draft horses.

Swine—A most favorable year and the pig crop was good as the stock man had no disease to contend with.

Lands—Selling high and going higher. More farms have been sold this year than for several years. The price has raised from $10.00 to $25.00 per acre during the season. Sales have been made as low as $75.00 per acre, but as high as $200.00; the average price being about $140.00.

Drainage—Farmers who own low lands have put in many miles of tile ditches this year. Private drainage districts have been formed in neighborhoods where conditions were favorable. Much county work has also been done.

Report of Fair—Held August 16-20, inclusive. On the first day, Tuesday, a heavy rain set in in the evening and continued over Wednesday, and the directors continued the fair over until Saturday night. The attendance was smaller than usual as the roads were impassable for a day. The exhibits were lighter than common, as they could not be brought in because of the weather. The races filled well, more than one hundred entries being made in the ten classes. In the exhibits, the cattle show was light as grass fed cattle were not fit. The horse show was good, and the swine show the best in many years. The other departments were excellent.

BUTLER.

W. C. SHEPARD, ALLISON, OCTOBER 8, 1910.

General Condition of Crops and Season—The condition of crops generally is above the average; the spring was very early and warm at first but cool and backward afterwards. The summer was warm and very dry, but the autumn has been warm and there has been plenty of moisture. At this date there has not been a frost sufficient to kill tomato plants and the like.

Corn—The stand was generally light because of poor seed and the cool dry spring. In some parts of the county it was effected by the dry weather in the spring and summer. The corn has practically all matured and will be of good quality.

Oats—One of the best crops we have had for years. The straw is of good quality and the grain is unusually good. The crop was hurt by drouth in some parts of the county.

Wheat—Not much raised in this county but what there was was good.

Rye—Rye was a very good crop this year; above the average.

Barley—Of good quality but not much raised in the county.

Flax—I do not know of any flax in the county.

Buckwheat—I do not know of any raised in the county.

Millet—A very good crop.

Sorghum—Very good quality but not much raised in the county.

Timothy—Good quality but a light stand on account of the dry weather.

Clover—Good quality but a light stand because of the drouth.

Prairie Hay—Not much left in this county but the yield and quality are good.

Other Grains and Grasses—Above the average.

Potatoes—Early potatoes were effected by the dry weather and were a very poor crop, probably not more than a fourth of a crop. The late potatoes are better but not more than half a crop. The late rains were of great benefit to them.

Vegetables—Generally a very good crop.

Apples—Practically no apples; they were frozen in the spring by a late frost.

Other Fruits—The fruits that were not hurt by the late frosts were effected by the dry weather, so that the fruit crop in this county was very meagre.

Cattle—The county has some very good cattle and they are all in fine condition generally.

Horses—As a general rule the farmers are raising the heavier breeds of horses and there are many good ones in the county. Thy are selling from $150.00 to $250.00 each. There were over 40 horses on display at our fair.

Swine—There are some very good swine in the county; the Poland Chinas leading in numbers, then Chester Whites, Duroc Jerseys, etc. The number is believed to be less than usual.

Sheep—There are not many sheep in the county although there are more now than a few years ago. They are of very good quality, some of them having taken premiums at the Iowa State Fair.

Bees—There are not many stands of bees here. They usually do well, however.

Drainage—The farmers over the county, especially the western part, are taking an interest in drainage and are tiling the wet portions of their farms.

Lands—Are selling from $60.00 to $150.00 per acre.

Report of Fair—September 6-8, inclusive. Had a very large attendance; large exhibits, and good weather.

CALHOUN.

THOS. GRIFFIN, MANSON, AUGUST 23, 1910.

General Condition of Crops and Season—Season favorable and crops extra good in this locality.

Corn—Very good; will average from sixty to eighty bushels per acre.

Oats—Yielded from 40 to 75 bushels.

Wheat—None grown.

Timothy—Good.

Clover—Extra Good.

Prairie Hay—Good.

Potatoes—Poor.

Vegetables—Very fine.

Apples—None.

Other Fruits—A few grapes.

Cattle—In good condition but not many on feed.

Horses—Usual number raised.

Swine—Not as many spring pigs as usual.

Poultry—Large number raised.

Bees—Fair amount of honey.

Drainage—Most farms pretty well tiled.

Lands—Ranging in price from $100 to $125.

Report of Fair—Held at Manson August 23-26 inclusive. Attendance good, and exhibits good in all departments.

CALHOUN.

A. J. HUNTER, ROCKWELL CITY, SEPTEMBER 26, 1910.

General Condition of Crops and Season—Good.

Corn—About two weeks late but if the frost holds off there will be a full crop.

Oats—Yield from 40 to 60 bushels per acre and the quality good.

Wheat—Not much raised but quality and yield good.

Rye—Good.

Barley—Not much raised but a good yield reported: about 35 bushels per acre.

Flax—Of fair quality but not much raised.

Millet—Heavy yield.

Sorghum—Good.

Timothy—Light.

Clover—First crop light; second crop excellent.

Prairie Hay—Light; not much raised.

Other Grains and Grasses—Spring and summer pasturage light; fall pasturage excellent and will put stock into winter in fine shape.

Potatoes—Light crop.

Vegetables—Good.

Apples—Crop very light; no winter apples and very few early varieties.

Other Fruits—Small fruits fair; late frost injured the most of the plums and cherries.

Cattle—Good stock of calves and they are in excellent condition.

Horses—Above the average, both as to quality and number. Generally in good condition.

Swine—Below the average, both as to quality and number.

Sheep—Not many raised in this county but what there are are in satisfactory condition.

Poultry—Eggs and poultry very plentiful.

Bees—Early honey light; late will be good.

Drainage—A great interest is manifested in drainage in this county and the amount of tile laid is only limited by the help obtainable to lay them. There are several large drains being put in by the county and the farmers are busy putting in laterals to drain into these outlets.

Other Industries—The Rockwell City Canning Company report the most prosperous season they have ever had. Their output will be near 1,500,000 cans.

Lands—Not much on the market but what there is is changing hands at from $100 to $150 per acre, according to the improvements and location.

Report of Fair—Held at Rockwell City July 26-29 inclusive; held over the 30th on account of rain. The attendance was good; showing of horses and poultry good but other stock was light on account of the early date. Altogether the fair was very satisfactory to the management.

CASS.

CARL E. HOFFMAN, ATLANTIC, OCTOBER 26, 1910.

General Condition of Crops and Season—The general condition of crops is average. The season was very dry until September.

Corn—Good quality and about 85 per cent of an average crop.

Oats—Good quality and about 110 per cent of an average crop.

Wheat—Good quality; 110 per cent of an average crop.

Rye—Not enough raised in the county to make an estimate.

Barley—Good quality and 100 per cent of a crop.

Millet—Fair; small acreage.

Timothy—Sixty per cent of a hay crop; short on account of dry weather.

Clover—Sixty per cent of a hay crop; short on account of dry weather.

Other Grains and Grasses—Short on account of dry summer; late rains helped fall grasses.

Potatoes—Only fifty per cent of an average crop on account of drouth.

Vegetables—Seventy-five per cent of an average crop.

Apples—No apples because of the late frost.

Other Fruits—Very little fruit of any kind.

Cattle—The average number of cattle but not so many on feed as usual.

Horses—The average number on hand.

Swine—Ninety per cent of the average number but not in as good condition as usual.

Sheep—One hundred per cent of the average number.

Poultry—Ninety per cent of the average number.

Lands—Very little selling on account of the money market but the price ranges about the same as one year ago.

Report of Fair—The fair was held at Atlantic September 19-24th inclusive. Owing to rain on the best days of the fair receipts were cut very nearly in two.

CASS.

D. P. HOGAN, MASSENA, OCTOBER 14, 1910.

General Condition of Crops and Season—Above the average.

Corn—Yield and quality good.

Oats—Yield and quality extra good.

Wheat—Yield and quality extra good.

Rye—None grown.

Barley—Not much grown but what there is is good.

Flax—None grown.

Buckwheat—None grown.

Millet—Not much grown.

Sorghum—Good; not much grown.

Timothy—Light yield; good quality; good crop of seed.

Clover—Good hay crop; not much seed.

Prairie Hay—Good but not much of it.

Other Grains and Grasses—Spring grass fair; fall grass extra good.

Potatoes—Light crop.

Vegetables—Fairly good.

Apples—None.

Other Fruits—Few grapes and strawberries.

Cattle—Fair number; in good condition.

Horses—Good supply of young horses and in good condition.

Swine—Old hogs about all sold; average number of pigs and in good health.

Sheep—Good supply and in good condition.

Poultry—Plentiful.

Bees—About the same as usual; plenty of honey.

Drainage—Considerable tiling; more being put in every year.

Lands—Advancing in value.

Report of Fair—Held at Massena September 5-8 inclusive. Had good attendance and the fair was financially a success. The stock exhibits were fairly good but the grain, horticulture and vegetables were not as good as usual.

CEDAR.

C. F. SIMMERMAKER, TIPTON, OCTOBER 1, 1910.

General Condition of Crops and Season—The season was very favorable in the early part and the crops were never put into the ground in better shape. However later on the season turned dry and this effected the crops generally, especially the corn. The weather during the fall has been fine.

Corn—On account of the dry summer the corn crop will be short, although there will be a very good average crop.

Oats—Never better, both as to yield and quality.

Wheat—Good but not much raised here. A car of wheat was shipped from Tipton this fall, this being the first car of wheat shipped from here in twenty years.

Rye—Good average crop.

Barley—Good crop; better than the average.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Not much raised but what was sown was good.

Sorghum—Very little raised.

Timothy—Fair crop.

Clover—Fair crop and considerable raised in this county.

Prairie Hay—None here to speak of.

Other Grains and Grasses—Hay was a good fair crop and the pastures were good the forepart of the season. The drouth during the summer dried them up considerably but the fall rains revived them.

Potatoes—Generally speaking the crop was poor.

Vegetables—Below an average crop.

Apples—Very poor.

Other Fruits—Strawberries were a very good crop; other fruits a failure.

Cattle—Plenty of cattle in the country but prices are held up some.

Horses—The good horses are pretty well picked up; this being one of the leading counties for good horses.

Swine—Plenty of hogs and no disease to speak of.

Sheep—More than usual and of good quality.

Poultry—More than ever; this being a great county for poultry.

Bees—Not much of a bee county.

Drainage—The county is all drained out.

Other Industries—Good.

Lands—Are good and the prices are going up right along. The selling price at the present time ranging from $100 to $215 per acre. There is much land selling.

Report of Fair—Held at Tipton, September 6-8 inclusive and was a great success. The stock show was said to have been the best ever held in the county and the entertainment and attendance was good.

CERRO GORDO.

ARTHUR PICKFORD, MASON CITY, OCTOBER 18, 1910.

General Condition of Crops and Season—The season was unusually dry and as a consequence the yield of all crops was lessened in amount. This was partially offset by the increase in quality of all grains and grasses. No disastrous storms occurred and the frost except in a few localities held off until well into October.

Corn—The generally poor quality of seed planted necessarily gave a poor stand. The continued drouth during the growing season shortened the yield. There is much complaint of barren stalks but the corn is sound.

Oats—Drilled oats showed up much better than the ones sown broadcast. The yield varied greatly, depending upon the amount of rainfall. The quality was good and the straw the best in many years.

Wheat—Best crop we have had for years. Some winter wheat sown. Spring wheat sown alone and with oats yielded well and had a very good berry.

Rye—The dry spring, especially in May and June, was unfavorable to rye which was generally short and not well filled.

Barley—Excellent color and good yield.

Flax—Very little flax sown but what there was was a fair crop and was secured in good condition.

Buckwheat—Buckwheat was a failure because of lack of moisture.

Millet—Very little sown; yield was poor.

Sorghum—Good crop.

Timothy—The drouth made the hay crop a failure and no seed was threshed.

Clover—Clover was about one-fourth of a crop at the first cutting and one-half crop at the second cutting. No seed was threshed.

Prairie Hay—Very little prairie hay grown here and that is on wet land, making about half a crop.

Potatoes—Early potatoes were a failure; some were not worth digging. Late potatoes grew until cut down by frost, making about one-half of a crop.

Vegetables—Where gardens could be watered there was a good yield of vegetables but ordinarily the crop was poor.

Apples—Practically no apples in the county; all killed by late frost.

Other Fruits—Small fruits were all killed by late frosts in the spring.

Cattle—Cattle have been fat all summer in spite of the short feed. They are in good demand at fair prices.

Horses—Bringing good prices; spring colts are scarce. Stock generally healthy.

Swine—A general scarcity of brood sows last fall resulted in a short lot of pigs. No hog cholera or other diseases among the swine.

Sheep—The season has been favorable to lambs and flocks are in good shape for winter.

Poultry—The dry weather has favored young chicks and losses have been below the normal. Eggs have been high all summer.

Bees—A poor season for honey; very few hives show a surplus.

Drainage—A great amount of tile is being put in and farmers are preparing for the wet seasons which will surely return.

Other Industries—Considerable interest is shown in beet raising.

Lands—Farm lands are increasing in value and many farms have changed hands at prices around $100 per acre.

Report of Fair—Held at Mason City, August 23-26 inclusive. Had fine exhibits of stock; poor exhibits of grain and fruit; good speed program; good weather and a good attendance. Dairy Day was a special.

CHICKASAW.

C. L. PUTNEY, NASHUA, SEPTEMBER 28, 1910.

General Condition of Crops and Season—Season looked very unfavorable at first but the ground was in good condition and well farmed and crops made a good average.

Corn—Fairly good yield and good quality; averaging from 35 to 40 bushels per acre.

Oats—Good quality and averages about 35 bushels per acre.

Wheat—Scarcely any wheat raised here.

Rye—Very little grown.

Barley—Good quality and yield but small acreage.

Flax—None raised.

Buckwheat—Very little grown.

Millet—Not as large acreage as usual.

Sorghum—Very little in county.

Timothy—New seeding good; some of the old seeding light; quality fine.

Clover—Small acreage; average crop.

Prairie Hay—Rather short crop.

Potatoes—No early potatoes on account of dry weather. Small crop of late ones.

Vegetables—Small crop.

Apples—None to speak of.

Other Fruits—Crop very small.

Cattle—We find there is a better show each year and more attention is being paid to breeding.

Horses—Same as cattle.

Swine—A nice showing of all breeds and all good ones.

Sheep—Very few sheep in the county but they are on the increase.

Poultry—Some fine birds and there is more interest taken in this industry than ever before.

Bees—None.

Drainage—Considerable tiling has been done in the last year.

Lands—Too low in comparison with other parts of the state but there is an increase the past year; sales being made from $75.00 to $125.00 per acre.

Report of Fair—Held at Nashua September 6-9 inclusive. Weather was good; expense about the same; attendance better and more interest shown in the fair than for some time.

CLAYTON.

HENRY LUEHSEN, GARNAVILLO, SEPTEMBER 17, 1910.

General Condition of Crops and Season—The past season has not been a very favorable one on account of the severe drouth in some localities.

Corn—Suffered considerable on account of dry weather. If the frost holds off an average crop of 75 per cent is expected.

Oats—Good crop; quality of the best, and the yield fully up to the average.

Wheat—Not much raised but some of the spring wheat is reported a good crop.

Rye—A good yield.

Barley—The best raised in many years.

Flax—Very little raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—A fair yield.

Timothy—Not very good.

Clover—Light crop.

Prairie Hay—Light crop.

Other Grains and Grasses—Not up to the average.

Potatoes—Some of the early ones are a total failure; the late ones may yield 50 per cent.

Vegetables—Not up to the average on account of dry season.

Apples—A failure.

Other Fruits—A very small yield.

Cattle—Our farmers are continually improving their herds. Clayton county can boast of some very fine specimens.

Horses—The Clayton county farmers can boast of having some of the finest horses in Iowa. Horse flesh is very expensive in this section.

Swine—One of the principle industries of this county. The farmers realize that the "grunters" are money makers for them.

Sheep—Our farmers have some very large flocks. The price of wool was a little below the expectations of the farmers.

Poultry—An industry that is receiving a little more attention each year. The farmer's wife realizes a handsome profit for her labor.

Bees—A number of our farmers are indulging in the bee business and with good success.

Drainage—Natural.

Other Industries—A farmers' creamery is one of the industries our farmers feel proud of.

Lands—Going up in price with very little offered for sale.

Report of Fair—The old Clayton county fair, fiftieth anniversary and home-coming was, without a doubt, the largest and best fair ever held.

The weather man did his part well, consequently the attendance was the largest in the history of the Association. The dates of the fair were August 29 to September 3d.

CLAYTON.

R. W. SCHUG, STRAWBERRY POINT, OCTOBER 26, 1910.

General Condition of Crops and Season—Wet during the early part of the season; dry the latter part. Average crops.

Corn—Average crop.

Oats—Average crop.

Wheat—Good.

Rye—Average crop.

Barley—Good.

Flax—None.

Buckwheat—Fair.

Millet—Very little raised.

Sorghum—Average.

Timothy—Fair crop.

Clover—Fair.

Prairie Hay—Fair.

Potatoes—Fifty per cent of a crop.

Vegetables—Good.

Apples—None.

Other Fruits—None.

Cattle—Mostly dairy; few feeders.

Report of Fair—September 6-9 inclusive. Fair weather; good attendance; good exhibits in all departments and largest receipts in history of Society.

CLAYTON.

W. W. DAVIDSON, ELKADER, OCTOBER 19, 1910.

General Condition of Crops and Season—Grass crop short but others all good.

Corn—Good.

Oats—Good quality and quantity.

Wheat—Good; but little raised.

Rye—Good.

Barley—Good crop; good quality.

Flax—None raised.

Buckwheat—Good; but little raised.

Millet—Good.

Sorghum—Good.

Timothy—Short crop on account of the dry weather.

Clover—Short crop because of the dry weather.

Prairie Hay—None.

Potatoes—Short crop; good quality.

Vegetables—Abundant.

Apples—None; late frosts killed the buds.

Other Fruits—Buds killed by late frosts.

Cattle—Fine.

Horses—Fine.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—Natural; rolling and hilly.

Lands—Advancing rapidly; ranging in price from $40 to $150 per acre.

Report of Fair—Held at Elkader September 14 and 15. There were large crowds and good weather prevailed.

CLINTON.

G. H. CHRISTENSEN, DEWITT, OCTOBER 27, 1910.

General Condition of Crops and Season—Fair.

Corn—Average crop.

Oats—Better than usual.

Wheat—Better than usual.

Rye—Average crop.

Barley—Good.

Buckwheat—Average.

Millet—Average.

Timothy—Good.

Clover—Good.

Potatoes—One-third of a crop.

Vegetables—One-third of a crop.

Apples—None.

Other Fruits—One-half crop of strawberries; no other fruits.

Cattle—Average.

Horses—Average.

Swine—Extra good.

Sheep—Average.

Poultry—Average.

Report of Fair—Held at DeWitt, September 14, 15 and 16.

CLINTON.

J. B. AHRENS, CLINTON, SEPTEMBER 30, 1910.

General Condition of Crops and Season—Small grains better than the general average; yield being good and quality excellent. The season was longer than usual.

Corn—In this part of the state there will be about 65 per cent of a crop and of good quality.

Oats—Quality extra good; yield abut 90 per cent of a crop.

Wheat—About 95 per cent of a crop. Wheat was sowed early and matured before the drouth set in.

Rye—Rye was very poor; only about 50 per cent of a crop.

Barley—Very good; yielding about 90 per cent of a crop.

Flax—No flax raised.

Buckwheat—None raised.

Millet—None in this immediate neighborhood.

Sorghum—Yielding about 60 per cent.

Timothy—Extra good quality but the yield was only about 50 per cent of a crop.

Clover—Very poor quality and yield about 25 per cent of a crop.

Prairie Hay—Very light; about 60 per cent of a full crop.

Potatoes—Early potatoes very short crop; late potatoes not matured.

Vegetables—Fairly good and an average crop.

Apples—Almost a failure.

Other Fruits—Nothing doing at all.

Cattle—Good number of them. Prospect of feeding cattle not as bright as usual. Very few on feed at the present time.

Horses—Scarce and prices high.

Swine—Medium lot of shoats; old hogs about all disposed of.

Sheep—About the usual number raised but there are not many sheep raised in this county.

Poultry—Plentiful and commanding high prices.

Bees—Not many being raised.

Drainage—Good. Very little tiling done in this vicinity as the natural drainage is good.

Other Industries—Prospering and there is a good demand for the output.

Lands—About as usual; prices ranging as high as $150 per acre for half section lots.

Report of Fair—Held at Clinton September 20-23 inclusive. The weather was good the first two days but it rained the last day, causing the attendance to decrease. The exhibits in all departments were filled to capacity.

CRAWFORD.

THOMAS RAE, ARION, SEPTEMBER 28, 1910.

General Condition of Crops and Season—Fairly good. The entire season extreme one way or the other.

Corn—The crop is cut off ten per cent throughout the county on account of drouth. Some corn is very late and will be injured if the frost comes before the middle of October.

Oats—Good quality; two-thirds of an average yield.

Wheat—Considerable winter wheat being raised; averaging 30 bushels per acre. Spring wheat averaged 18 bushels and was of good quality.

Rye—Good quality but not raised to any extent.

Barley—Fair yield; averaging about 30 bushels per acre. Heavy dews caused the straw to color.

Flax—Practically no flax raised.

Buckwheat—Very little raised.

Millet—Considerable being raised this season.

Sorghum—Some sorghum raised.

Timothy—About one-half of an average yield.

Clover—Very little clover hay; the seeding one year ago being killed by freezing.

Prairie Hay—About one-half of an average yield.

Potatoes—One-half of an average.

Vegetables—Only raised for home use.

Apples—Entirely destroyed by freezing.

Other Fruits—A few grapes; no other fruits.

Cattle—About the average number and about the usual number being purchased for feeding.

Horses—In fair condition but are below the average in number.

Swine—In good condition but the number of pigs is below the average.

Sheep—Are gaining in favor.

Poultry—Are too much neglected on the farms but where properly attended they make money in every case.

Bees—Have laid up good stores of honey.

Drainage—Not much drainage needed in our county with the exception of Boyer Valley and work has just been commenced on the Boyer Ditch, which if successful, will save much valuable land.

Other Industries—Limited.

Lands—Still high in price but not so much changing hands this year. Sellers usually going to Dakota or Western Canada for cheaper land.

Report of Fair—Fair held September 13, 14 and 15. We are improving each year in the number of exhibits. Sheep and hog exhibits were especially good.

DAVIS.

H. C. LEACH, BLOOMFIELD, OCTOBER 20, 1910.

General Condition of Crops and Season—Good; season has been fine up to date.

Corn—Acreage and yield good; quality fine and well matured.

Oats—Acreage fair; quality excellent; yield large.

Wheat—Small acreage; yield and quality good.

Rye—Not much raised this year.

Barley—None.

Flax—None.

Buckwheat—But little raised this season.

Millet—Acreage small; quality good.

Sorghum—Acreage fair; quality first class.

Timothy—Medium yield; quality good.

Clover—Large acreage; excellent crop. Nearly all fields produced two cuttings.

Prairie Hay—Only raised in swamps, etc.

Other Grains and Grasses—All natural pastures have been good.

Potatoes—Small yield; quality good.

Vegetables—Quality fine; yield good.

Apples—Almost an entire failure.

Other Fruits—Nearly all fruits are an entire failure on account of the late snow storm and freeze last spring.

Cattle—Not as many as usual in the county but the quality is first class, owing to our fine clover and blue grass pastures.

Horses—About as usual; quality steadily growing better.

Swine—Somewhat scarce and prices high. The quality is fine and no cholera reported.

Sheep—About the usual number and doing well.

Poultry—Raised in large numbers and all appear to be doing well.

Bees—Not many and did only fairly well this season.

Drainage—Not much done in this connection.

Lands—Quite a good deal selling and bringing from $60 to $125 per acre. There are lots of farms that could not be bought for $150 per acre.

Report of Fair—Held September 13-16th, inclusive, at Bloomfield. The fair was the most successful one ever held in Davis county.

DELAWARE.

T. WILSON, MANCHESTER, SEPTEMBER 28, 1910.

General Condition of Crops and Season—The season as a whole has been fair; plenty of moisture in the early months, mid-summer dry and the balance of the season had the average rainfall.

Corn—There will be a good average crop in this locality; some places extra good; some poor on account of drouth.

Oats—Very good crop over entire county; good color and good weight.

Wheat—Not much sown; acreage increasing each year. Quality and yield very good this season.

Rye—Not much grown.

Barley—On the average the crop was good.

Flax—None grown.

Sorghum—Fair; not as good as usual.

Timothy—Very good crop; all put up in fine condition.

Clover—Fair crop; put up in excellent condition.

Potatoes—On the average the crop was poor. Bugs and dry weather did the damage.

Apples and Other Fruits—Nearly all destroyed by late snow storm and frosts. There were a few strawberries and grapes.

Cattle—Have been uniformly healthy this season. Good cows at present are extremely high priced.

Horses—Horses are not overly plentiful and are high priced.

Swine—Have been very healthy.

Sheep—Not many in the county; some pure-bred flocks.

Poultry—The poultry business has done well this year; eggs and chickens high priced.

Drainage—There is a good bit of drainage being done this season and this work seems to be on the increase.

Lands—Lands in this county are increasing in price. There seems to be a growing, healthy, demand for Delaware county lands.

Report of Fair—Held on the 14, 15, and 16 of September. The society will, by strict economy, pay all premiums and expenses.

DICKINSON.

T. H. KELSEY, MILFORD, OCTOBER 26, 1910.

General Condition of Crops and Season—The season was very cold and backward during the spring but showers later on made the grain start well.

Corn—Corn made a good sprout and will average 40 bushels or better. Crop all matured.

Oats—The best crop we have had for years; averaging about 40 bushels to the acre.

Wheat—A heavy crop; spring wheat has not been better since 1895.

Rye—Good, but not much grown here.

Barley—An extra good crop.

Flax—Good, but very little raised.

Timothy—Poor crop; injured by worms.

Clover—Good.

Prairie Hay—Light; one-third of a crop.

Potatoes—A good half crop.

Vegetables—Very good.

Apples—None on account of late frost.

Other Fruits—None.

Cattle—Good condition.

Horses—Good.

Swine—Are doing well and are in great demand. We have all the leading breeds here.

Sheep—Not a great many here but we have several herds of pure bred stock.

Poultry—Had a fine exhibit at the fair.

Drainage—Great progress being made and all low land being tiled.

Lands—Fast advancing in price.

Report of Fair—Fair was held at Milford on September 7, 8, and 9, and was a success.

EMMET.

H. W. WOODS, ESTHERVILLE, DECEMBER 13, 1910.

General Condition of Crops and Season—Season was unusually good and a record crop of all kinds of small grain was harvested.

Corn—Quality extra good; some better than an average yield.

Oats—The best crop of oats we have had for several years; some fields yielding 95 bushels to the acre and the quality was extra fine.

Wheat—Yielded from 15 to 38 bushels per acre; an increase of 20 per cent in acreage.

Rye—Very little raised.

Barley—Good crop and good price.

Flax—Fair; 10 bushels per acre. Not much sown.

Buckwheat—Very little raised.

Millet—Good growth but not much raised.

Sorghum—None raised.

Timothy—Very light; about one-half a crop but it was secured in fine shape. Worms destroyed the seed crop.

Clover—Light crop but saved in good shape. Not much seed threshed.

Prairie Hay—About one-half a crop.

Potatoes—Early potatoes light; late ones about 80 per cent of an average crop; quality good.

Vegetables—Very little raised for market; home gardens fair.

Apples—A failure.

Other Fruits—Very little fruit of any kind.

Cattle—Generally in good condition; about the usual number on the farms.

Horses—In good condition and selling high.

Swine—Supply rather low. A big demand for light shoats; no sickness.

Sheep—Sheep are in good condition but there are very few in the county.

Poultry—Somewhat neglected but more attention is being paid to the better breeds.

Bees—The best season for bees that we have had in many years.

Drainage—A wonderful amount of drainage has been done the past year and more will be done next year.

Other Industries—Good.

Lands—Advancing in price and considerable changing hands.

Report of Fair—No fair held in Emmet county this year.

FAYETTE.

E. A. MCELREE, WEST UNION, OCTOBER 6, 1910.

General Condition of Crops and Season—The season has been very peculiar, the early spring mild and warm, later on heavy snow fell and this was succeeded by hard freezes. However, the crops matured from the snow water in the ground and the exceptionally fine fall has brought everything up to a full average crop of the very best quality.

Corn—Started out with poor seed and a very poor stand; was very backward all spring but the late fall made of it a full average crop.

Oats—The best in many years; nearly all harvested and threshed without a drop of rain. The quality of the grain was fine.

Wheat—Considerable wheat was sown and produced the best crop we have had for 30 years. Some pieces of spring wheat going as high as 35 bushels per acre.

Rye—A light crop; matured during the dry weather and was not of very good quality.

Barley—Was the best crop we have had for several years; exceptionally fine quality. Many pieces yielding as high as forty bushels per acre.

Flax—Only a very small amount sown, which was poor on account of the dry summer.

Buckwheat—A very poor crop; only a small amount sown.

Millet—Not enough came to maturity to be of any consequence. Very little was sown on account of the drouth.

Sorghum—Quality good, but only grown to a limited extent.

Timothy—Hay and seed both a light crop; only a small amount saved for seed.

Clover—Badly winter killed and old seeding was very light. Some new seeding made a good crop but there was no seed to speak of.

Prairie Hay—Was a light crop and is only raised in very small quantities.

Other Grains and Grasses—Quack grass and blue grass are making an exceptionally fine aftermath for stock this fall. Fall pastures were never better.

Potatoes—Are a very short crop in this county. Early potatoes were nearly ruined by drouth and a very few late ones were in condition to be benefited by the fall rains. Potatoes are being shipped into the county.

Vegetables—Are being very much benefited by the fall rains and the supply is good and of excellent quality.

Apples—Nearly a total failure; possibly 15 per cent of a crop and only of medium quality.

Other Fruits—All kinds of berries were a very light crop and grapes were also very light and badly frozen back.

Cattle—Had a hard time on account of the late spring and the very dry summer. When the fall rains started in many farmers were feeding hay.

Horses—Have been free from disease and there are a large number of colts.

Swine—Were never more healthy, but most stock hogs are quite thin on account of the corn shortage. There are a good lot of pigs.

Sheep—Not many raised in this county but those which we have are of good quality and have been found very profitable.

Poultry—Poultry has done exceptionally well this year on account of the dry season. This industry is getting to be a very profitable one on the farms.

Bees—Were nearly all killed last winter and spring by a disease which seems to be carried from one hive to another. The season for honey was also very poor. More than two-thirds of all the swarms in stock one year ago have died since then.

Drainage—Is being quite extensively taken up and many farmers are preparing to lay a good deal of tile next year.

Other Industries—On the increase.

Lands—Have advanced in price from five to ten dollars per acre in all parts of the county and rents have advanced about fifty cents per acre. The demand for farms is good.

Report of Fair—The Fayette County Agricultural Society held its fair at West Union this year on September 6, 7, 8, and 9, and it was in every way successful. The stock exhibits were very good; exhibits of farm products fine and fruit excellent. The attendance on the largest day was around ten thousand. The society was never in a more flourishing condition.

FAYETTE.

C. H. KNOS, OELWEIN, OCTOBER 28, 1910.

Corn—Very Good.

Oats—Quality and yield very good.

Timothy—Light.

Clover—Light.

Prairie Hay—Very little in the county.

Potatoes—Fairly good.

Vegetables—Good.

Apples—Not many.

Other Fruits—Not very good.

Cattle—Not many pure bred cattle in the county. Farmers veal nearly all of their calves. Cows sell from $10.00 to $15.00 per head higher than ever before.

Horses—Lots of young horses in the county and the quality is improving.

Swine—Average crop.

Sheep—Not many.

Lands—Have increased from $5.00 to $20.00 per acre the past year.

Report of Fair—Held at Oelwein September 14, 15, 16, and 17. Not very large exhibits of vegetables but of very good quality. Not many cattle or hogs but good exhibit of horses, especially single and double carriage horses.

FLOYD.

JAS. A. KING, CHARLES CITY, DECEMBER 30, 1910.

General Condition of Crops and Season—Season was remarkably dry but fully one-half of the county had sufficient moisture in the ground to last through the dry season so that about a normal crop was had. The quality of all crops over this half of the county was above normal and in the rest of the county they were at least normal.

Corn—Quality was uniformly high, above the average. In a third to a half of the county the yield was not over half normal but the other half of the county was normal.

Oats—Same as corn.

Wheat—Same as corn; acreage was larger than normal, especially the winter wheat.

Rye—Same as corn.

Barley—Same as corn. The barley that was threshed early graded as brewing barley, something unusual for this section of the county.

Flax—About normal in yield and above normal in quality.

Buckwheat—Practically a failure where attempted in the county as the drouth had affected all parts of the county by seeding time.

Millet—Same as buckwheat.

Sorghum—I know of none in the county.

Timothy—In a third to half of the county the yield was not over 15 to 25 per cent of normal and quality was low because of the excessive drouth. In the rest of the county the yield was approximately 75 per cent of normal with average quality.

Clover—For the entire county the yield would be about 50 per cent of normal with the quality 75 to 80 per cent. With rare exceptions no second crop was cut.

Prairie Hay—Same as timothy.

Potatoes—Yield and size of tuber below normal.

Apples—Crop practically a complete failure.

Other Fruits—Same as apples.

Cattle—Prices ruling at local auction sales at opening of the season are very high in spite of crop conditions. Stuff ranging on local pastures often had to be fed during the late summer and fall and so in some instances quality is low because many farmers hesitated to feed much, fearing a shortage of feed.

Horses—Quality and prices normal; no more changing hands than usual.

Swine—Hogs have ruled high all year. Many farmers are beginning to realize the necessity of holding their breeding stock so the out go of this grade of stock seems to have lessened.

Sheep—But few raised in the county and I know nothing of them.

Poultry—Know little or nothing of the poultry industry.

Bees—Know nothing of the bee industry.

Drainage—Considerable drainage work has been done in this county this year despite the dry season. Several large private projects have been completed this year besides numerous small ones. There is much undrained and poorly drained land in this county but interest in drainage is increasing.

FRANKLIN.

SHERWOOD A. CLOCK, HAMPTON, OCTOBER 18, 1910.

General Condition of Crops and Season—Extra good.

Corn—Forty to eighty bushels per acre; extra good quality and large acreage. Estimated as the largest crop every grown in the county.

Oats—Fine crop, thirty to fifty-five bushels per acre, over-running thirty-three bushels per 100 bushels machine measure. Extra good quality.

Wheat—Small acreage in this county; forty bushels per acre raised by the few who sowed it. In late years this crop has been a good producer.

Rye—Small acreage; good yield.

Barley—Small acreage; good yield.

Flax—Small acreage; poor crop on account of drouth.

Buckwheat—Poor crop on account of drouth.

Millet—Poor crop on account of drouth.

Sorghum—Good crop; small acreage.

Timothy—Very short on account of drouth; about one ton per acre.

Clover—Short crop on account of drouth; good seed crop in second growth.

Prairie Hay—Small acreage; short and poor on account of drouth.

Other Grains and Grasses—Short on account of drouth.

Potatoes—Yield of early potatoes very poor. Late ones better yield and better quality but all were affected by the drouth.

Vegetables—Short crop on account of drouth.

Apples—Very poor crop on account of late spring freeze.

Other Fruits—Poor crop on account of late spring freeze.

Cattle—Number under the average but we have some very good quality in local stuff.

Horses—Quality improving each year.

Swine—Medium crop of young stock; old ones about all sold off.

Sheep—Many lambs shipped into county for fall feed. The dry year was good for breeding.

Poultry—Good year for raising chickens; extra large number raised.

Bees—Not a commercial product.

Drainage—On the increase; more tile used every year.

Other Industries—Increasing.

Lands—$75.00 to $170.00 per acre; many transfers.

Report of Fair—Good fair; largest attendance ever had; good program and the public was well pleased. Rainy weather cut down the exhibits.

GRUNDY.

L. M. HAWN, GRUNDY CENTER, OCTOBER 20, 1910.

General Condition of Crops and Season—Crops are above the average in yield and quality. The season has been very favorable although the rainfall has been below the average.

Corn—Good yield, from forty to seventy-five bushels per acre and of splendid quality.

Oats—Best crop we have had for years; averaging from forty to eighty-five bushels per acre. Quality of the very best, some testing forty-four pounds.

Wheat—Winter wheat good; no spring wheat raised.

Rye—None raised.

Barley—Light yield and poor quality; acreage below the average.

Flax—None raised.

Buckwheat—None raised.

Millet—Average crop; very little sown.

Sorghum—None raised.

Timothy—Light crop; quality good.

Clover—Light crop with the exception of new seeding, which was very good.

Prairie Hay—Very little prairie hay; fair crop.

Potatoes—Very uneven both as to yield and quality; acreage below that of former years, yielding from sixty to two hundred bushels per acre.

Vegetables—Fair crop.

Apples—Good crop.

Other Fruits—Good crop of small fruits.

Cattle—Cattle will go into winter in fine condition. Not many cattle being fed in the county at present and the indications are that not many will go into feed lots this winter.

Horses—The high price for horses the past few years has drained the county of the better grades but a splendid grade of young horses will soon take their places.

Sheep—Only a few flocks in the county; quality good.

Poultry—High price of poultry and eggs has caused an increased interest in this industry. Improved breeds are being raised.

Bees—Season favorable and bee keepers are satisfied with results.

Drainage—A large amount of tile drains have been put in this season.

Other Industries—Prosperous.

Lands—Very high and steadily increasing in value, selling from $125.00 to $200.00 per acre.

Report of Fair—Held September 20-22. All departments were well filled. The attendance on the second day was the largest we have ever had. Rain spoiled the program the last day but financially the fair was a success.

GUTHRIE.

T. E. GRISELL, GUTHRIE CENTER, OCTOBER 28, 1910.

General Condition of Crops and Season—The season has been most favorable for all crops with the exception of the hay and potatoes, which were short on account of the early drouth.

Corn—Exceptionally fine crop; yielding from forty to sixty bushels per acre and it is of the finest quality.

Oats—Splendid crop; good quality and yielded from twenty-five to fifty bushels per acre.

Wheat—Best crop we have had for several years; yield and quality good.

Rye—Very little raised in this county.

Barley—Good yield; good crop.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—Small crop; very little raised.

Timothy—Light crop but of good quality.

Clover—Fair yield.

Prairie Hay—Good crop.

Potatoes—An ordinary crop.

Vegetables—All varieties good.

Apples—None.

Other Fruits—All killed by early spring frosts.

Cattle—Feeding cattle are scarce and a great many are being shipped in from other points for feeding purposes.

Horses—A great many fine horses, mostly of the draft type, are being raised.

Swine—The number of hogs in this county this year exceeds all former years.

Sheep—Not raised to any great extent; very few feeders in this section.

Poultry—Exceptionally good this year.

Bees—Very few here.

Drainage—A great deal of draining has been done the past year.

Other Industries—None of special note.

Lands—Lands in this section have raised about $10.00 per acre during the past six months.

Report of Fair—The Guthrie County Fair was held October 4-7, and a fine exhibit of the resources of the county was on display. After the first day the weather was fine and the crowds were record breakers. The association spent considerable money this season on permanent improvements.

HANCOCK.

F. B. ROGERS, BRITT, OCTOBER 25, 1910.

General Conditions of Crops and Season—Crops are in better condition than they have been since 1901; all, with the exception of potatoes, being above the average.

Corn—On account of poor seed many fields had to be replanted but we will have more than an average crop.

Oats—Average yield; weight was heavy.

Wheat—Better crop than we have had for years; yield varying from twenty to thirty-five bushels per acre. There were a few fields of winter wheat sown.

Rye—Only a few fields of rye but the average was thirty-five bushels per acre.

Barley—Extra good quality and bright on account of favorable weather during harvesting. The yield varied from thirty to fifty bushels.

Flax—But little sown but the yield was good.

Buckwheat—Very little sown; dry weather affected the yield.

Millet—Very little sown; thin stand on account of dry weather.

Sorghum—What little there was sown was good.

Timothy—Lighter stand than usual, averaging from one ot two tons per acre.

Clover—Was a good deal better than timothy, some going as high as three tons per acre.

Prairie Hay—On account of the dry weather more low lands were cut than heretofore and more prairie hay will be shipped than for years. The quality was above the average.

Potatoes—Good quality but below the average yield. However, there are more than enough to supply the local need.

Vegetables—Better display of vegetables at the fair than ever before.

Apples—No apples.

Other Fruits—Strawberries were fair; other fruits killed by frosts.

Cattle—There are more cattle of better quality in the county each year.

Horses—There were more horses shipped out of the county last spring than any three springs before. Horses are improving as to quality and the number is increasing.

Swine—Owing to the favorable spring we have an unusually good lot of young pigs. Some cholera reported in the county.

Sheep—There is a noticeable increase in the sheep industry; mostly Shropshires.

Poultry—With exception of the fancy breeds every variety of poultry was exhibited at our fair. There were never so many by half before.

Bees—But few bees and very little honey, not enough for local use.

Drainage—More drainage contemplated than ever before.

Other Industries—Progressing.

Lands—Land has advanced from $15.00 to $20.00 per acre in value the past year.

Report of Fair—Held at Britt September 20-23, inclusive. We had the best exhibits we have ever had and the fair would have been very successful if it had not been for the rain.

HARDIN.

H. S. MARTIN, ELDORA, OCTOBER 4, 1910.

Corn—Good.

Oats—Good.

Wheat—Good.

Timothy—Light.

Clover—Fair.

Potatoes—Poor.

Vegetables—Fair.

Apples—None.

Other Fruits—Poor.

Cattle—Fat.

Horses—Fair.

Sheep—Fair.

Poultry—Average.

Lands—Price ranging from $100.00 to $165.00 per acre.

Report of Fair—Held September 6 to 9, inclusive.

HARRISON.

A. B. HASBROOK, MISSOURI VALLEY, OCTOBER, 1910.

General Condition of Crops and Season—The spring and early summer was dry, almost no rain falling up to the middle of August.

Corn—Large acreage planted; quality excellent; average yield.

Oats—Good quality; average yield.

Wheat—More winter wheat planted than in any previous year. Both yield and quality were excellent. Less spring wheat was planted than previously but the quality and yield were excellent.

Rye—Raised only for early pasture.

Barley—Almost no barley raised in the county.

Flax—But little raised.

Buckwheat—Not a crop in this county.

Millet—Very little raised.

Sorghum—Very little raised.

Timothy—Very light crop; yielding about one-half ton per acre.

Clover—Light crop and the yield was poor.

Prairie Hay—Very light crop; averaging about one ton to the acre.

Other Grains and Grasses—Alfalfa is becoming more popular each year. It stands dry weather and the crop per acre is very valuable.

Potatoes—Very nearly a failure; the yield being from twenty-five to fifty bushels per acre.

Vegetables—The late rains brought the late vegetables up to an average crop.

Apples—The whole crop was killed by frosts.

Other Fruits—Killed by frosts.

Cattle—Much interest taken in this industry; Shorthorn, Hereford and Polled Angus are the popular breeds. Cattle are healthy at this time.

Horses—This industry very popular; draft horses are favored.

Swine—From two to three thousand raised in this county; Duroc Jerseys being the leading breed. No disease.

Sheep—Little interest shown in sheep breeding; Shropshire being the principal breed.

Poultry—A good exhibition of all the standard breeds was made at our fair. There are many poultry breeders in the county.

Bees—Not a profitable industry.

Drainage—More than a half million of dollars has been expended in drainage during the past five years. Thousands of acres have been tile drained by individual owners.

Lands—Land values have doubled within the past five years; farms are sold at from $75.00 to $200.00 per acre.

Report of Fair—The Harrison County Agricultural Society held their fair on the 28, 29, and 30th of September. The weather was fair and attendance moderate. The exhibit of swine was good; horses only fair and fruits very light. The speed program is becoming year by year more popular. Our classes did not fill well, making the exhibition at the speed ring expensive. We will pay all expenses, purses and premiums.

HENRY.

J. W. EDWARDS, MT. PLEASANT, SEPTEMBER 28, 1910.

General Condition of Crops and Season—Weather was good during the spring; dry for harvest.

Corn—Large acreage; good condition and will make a splendid yield.

Oats—Good quality; straw short.

Wheat—Not extensively raised; quality good.

Rye—Fair; very little raised.

Barley—Very little, if any, raised.

Flax—Very little raised.

Buckwheat—Very little, if any, raised.

Millet—Heavy yield, but not much raised.

Sorghum—Good yield, but very little raised.

Timothy—Good crop.

Prairie Hay—Very little.

Other Grains and Grasses—Blue grass chief pasturage and it is short this summer on account of dry weather.

Potatoes—Very small crop; too dry.

Vegetables—Fair; too dry most of the summer.

Apples—Practically none.

Other Fruits—With the exception of strawberries all fruit was killed by frosts.

Cattle—Not extensively raised; some good herds.

Horses—Exceptionally good class of horses raised, both draft and light harness. Farmers are taking considerable interest in breeding.

Swine—A large number of hogs raised and are bringing good prices.

Sheep—Not much interest taken in sheep but what we have are of good quality and bring good returns.

Poultry—Considerable poultry raised; increased interest taken in pure breds.

Bees—Very little attention given to this industry.

Drainage—More tiling being done every year.

Other Industries—Improving.

Lands—Prices good; ranging from $65.00 to $250.00 per acre.

Report of Fair—Held at Mt. Pleasant August 16-19, and was a very successful meeting. The races were the best we have ever had on the track; cattle and hog exhibit larger than usual; sheep and horses light. Receipts were good, leaving a nice surplus.

HENRY.

A. L. BERGSTEN, WINFIELD, OCTOBER 24, 1910.

General Condition of Crops and Season—Condition of crops good. Early season good; summer rather dry; fall weather fine.

Corn—Good quality and will be a good yield.

Oats—Good yield and good quality; best in five years.

Wheat—Not much sown but the yield was good.

Rye—None.

Barley—None.

Flax—None.

Buckwheat—Very little sown.

Millet—Very little sown.

Sorghum—None to speak of.

Timothy—Fair crop.

Clover—Good yield.

Prairie Hay—None.

Potatoes—Medium yield.

Vegetables—Good.

Apples—None.

Other Fruits—Very light crop.

Cattle—Not many cattle on feed.

Horses—Quality of horses good.

Swine—Fair crop.

Sheep—Very few.

Poultry—Good.

Bees—Very few.

Drainage—Good.

Lands—Range in price from $100.00 to $250.00 per acre.

Report of Fair—Held September 13-16, 1910. Weather bad; rained some each day.

HOWARD.

M. B. DOOLITTLE, CRESCO, 1910.

General Condition of Crops and Season—The severe drouth, which commenced early in June and lasted until late in August, affected all crops.

Corn—Early corn poor; late corn excellent; on the whole hardly an average crop.

Oats—Excellent on heavy land and poor on sandy land. Average good.

Wheat—But little sown; yield good.

Rye—But little sown; yield above the average.

Barley—Much sown; yield large; prices high.

Flax—Average amount sown; yield fair; prices good.

Buckwheat—None sown; too dry.

Millet—None sown; too dry.

Sorghum—None planted so far as I know.

Timothy—Very little seed; small amount of hay.

Clover—I know of none cut for seed.

Prairie Hay—One-half crop.

Potatoes—Early ones very small; late ones large; full crop.

Vegetables—Same as potatoes.

Apples—Not any on account of freezes in the spring.

Other Fruits—Not any; too dry.

Cattle—Sold off short for want of feed.

Horses—Plenty; many sold.

Swine—Full crop; corn is being shipped in to feed them.

Sheep—Sold off short.

Poultry—Full crop; thousands sold and thousands being wintered.

Bees—Small profit; too dry for making honey.

Drainage—None needed this year.

Other Industries—On the increase.

Lands—Going up in price; selling from $50.00 to $150.00 per acre.

Report of Fair—No fair held.

HUMBOLDT.

E. B. BRAVINDER, HUMBOLDT, OCTOBER 15, 1910.

General Condition of Crops and Season—The general condition of crops is good, the scarcity of rainfall injured some corn but on the whole the crops are better than usual.

Corn—There is a large acreage in the county this year and most of it will go fifty bushels to the acre.

Oats—We have had some pieces of oats that yielded as high as 87½ bushels per acre.

Rye—Practically none sown, except for hog pasture.

Barley—Good, but very little raised.

Flax—None raised that I know of.

Buckwheat—Very little raised.

Millet—That which was late enough to be benefited by the fall rains was very good.

Sorghum—A good crop; excellent quality.

Timothy—Light crop on account of dry weather.

Clover—The first crop was light but was put up in fine shape. The second crop was fair and seemed to have some seed in it.

Prairie Hay—Was very light.

Potatoes—Generally a poor crop.

Vegetables—Plentiful; fair quality.

Apples—None.

Other Fruits—None to speak of.

Cattle—Are looking very good this fall, the late rains helped the pastures.

Horses—A good lot of colts was raised in the county this year. Some were shown at our fair and were of excellent quality.

Swine—Fair; the early pigs did not do well for some reason. Duroc Jerseys predominate.

Sheep—More sheep are being raised from year to year; mostly Shropshires.

Poultry—The dry weather promoted poultry raising this year and there seems to be an abundance of chickens of excellent quality.

Bees—The honey output was not up to the standard but the quality was good.

Drainage—An enormous amount of tile has been put in the past year.

Other Industries—Trade in every line is booming this fall; help is hard to get.

Lands—Farm lands have increased fully $25.00 per acre in value. The average price for a good farm is from $100.00 to $125.00 per acre.

Report of Fair—Held at Humboldt September 13-16, inclusive. Rainy weather cut our attendance down one-third and as a result we are behind about $300.00. The fair, if conducted next year, will be under new management.

IOWA.

H. H. BRIMMER, MARENGO, OCTOBER 29, 1910.

General Condition of Crops and Season—Crops fairly good, forepart of season very dry.

Corn—Eighty per cent of a crop; extra good quality.

Oats—Ninety per cent of a crop; extra good quality.

Wheat—Considering our locality we judge 90 per cent; quality extra good.

Rye—Quality very good, but very little sown.

Barley—Very little sown in this section; quality good.

Flax—None sown that we know of.

Buckwheat—None sown that we know of.

Millet—Very little sown; good yield and good quality.

Sorghum—Small amount but of good quality.

Timothy—Light crop but of extra good quality.

Clover—Spring seeding a partial failure. Good second crop.

Prairie Hay—None.

Other Grains and Grasses—Very light.

Potatoes—Early crop 25 per cent; late fairly good, 60 per cent.

Vegetables—Early vegetables good.

Apples—None.

Other Fruits—Practically none.

Cattle—We have our average number. Fall pasture is extra good and the cattle will go into winter quarters in fine shape.

Horses—Practically the same as cattle.

Swine—We have a good average and they are in exceptionally fine condition.

Sheep—Very few sheep raised in this locality but what there are are fine.

Poultry—We have an extra fine lot of chickens.

Bees—Good stand this year.

Drainage—There has been miles of tile put in this season.

Other Industries—No manufacturing in this county to speak of.

Lands—Quite a lot changing hands at prices from $100.00 to $250.00 per acre. Still going up.

Report of Fair—Held September 20, 21, and 22.

IOWA.

CHAS. FLETCHER, WILLIAMSBURG, OCTOBER 8, 1910.

General Condition of Crops and Season—With the exception of horticultural products crops are in very good condition.

Corn—This crop will be above the average, both as to yield and quality.

Oats—Especially good quality and yielding from forty to sixty bushels per acre.

Wheat—Very little raised in this county this year but it is of very good quality and averages about thirty-five bushels per acre.

Rye—Not raised.

Barley—None sown.

Flax—None.

Buckwheat—None sown.

Millet—None sown.

Sorghum—None.

Timothy—Rather below the average yield but the quality is excellent.

Clover—An excellent crop through this section.

Prairie Hay—None to speak of.

Potatoes—Below the average yield but excellent quality.

Vegetables—Same as potatoes.

Apples—Practically a failure.

Other Fruits—The frost killed all fruits.

Cattle—Iowa county has as good cattle as can be found anywhere. Polled Angus, Herefords, and Polled Durhams predominate.

Horses—Largely of the Clydesdale, Percheron and Coach breeds.

Swine—Farmers in this section take great interest in raising good hogs. Poland Chinas, Duroc Jerseys and Chester Whites are the predominating breeds.

Sheep—Not more than a half dozen farmers in this county raise sheep. There are no large flocks aside from the Amana Societies.

Poultry—The greatest money producer in Iowa county today is the hen. Our dealers in this town paid out $88,000.00 to the farmers for poultry and eggs the past year.

Drainage—Much attention has been given to drainage in this county. There is scarcely any land but what is now productive.

Other Industries—Tomato canning factory doing a good business.

Lands—All lands have increased in value; good farms selling from $140.00 to $225.00 per acre.

Report of Fair—The Williamsburg fair was held September 13, 14, and 15, and was recognized as one of the best in the history of the association. There was much interest manifested by the rural supporters.

JACKSON.

B. D. ELY, MAQUOKETA, SEPTEMBER 19, 1910.

General Condition of Crops and Season—Very dry during July and August but on the whole the crops will be better than usual.

Corn—Not quite an average crop.

Oats—Best we have had in a good many years.

Wheat—Very good but not much raised.

Rye—Good.

Barley—Very good.

Flax—None raised.

Buckwheat—Looks good at present writing.

Millet—Not much raised.

Sorghum—Not much raised.

Timothy—Not a very big yield but the quality was the best we have had in years.

Clover—Dry weather makes it a little short.

Prairie Hay—Not much in this county.

Other Grains and Grasses—Not much raised in this county.

Potatoes—Small on account of dry weather.

Vegetables—Good but a little short in quantity.

Apples—Late spring frost killed all apples.

Other Fruits—Very short.

Cattle—Good quality.

Horses—Good and a great number raised in this county.

Swine—Same as horses.

Sheep—There seems to be more sheep than usual.

Poultry—Good quality; raised extensively.

Bees—Very few.

Drainage—Good; natural.

Other Industries—Two lime kilns and an overall factory.

Lands—Increasing in value every year.

Report of Fair—Held at Maquoketa September 6-9, inclusive. It was the most successful fair we have had for a number of years; large exhibits in every department.

JASPER.

F. E. MERIDETH, NEWTON, OCTOBER 3, 1910.

Corn—Good.

Oats—Good.

Wheat—Fall wheat good.

Rye—None.

Barley—None.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—Medium.

Timothy—Medium.

Clover—Good.

Prairie Hay—Good.

Potatoes—Not very good.

Vegetables—Good.

Apples—Very poor.

Other Fruits—Scarcely any.

Cattle—Good.

Horses—Very good.

Swine—Good.

Sheep—Good.

Poultry—Very good.

Lands—Good.

Report of Fair—Held September 12-15, inclusive. Weather was unfavorable most of the time; one nice day with a very good attendance.

JEFFERSON.

A. E. LABAGH, FAIRFIELD, DECEMBER 5, 1910.

General Condition of Crops and Season—Good.

Corn—Big yield and of good quality.

Oats—Same as above.

Wheat—Average yield; about twenty-five bushels per acre.

Rye—Practically none; very small acreage.

Barley—No acreage.

Flax—No acreage.

Buckwheat—None.

Millet—None.

Sorghum—Good yield, but small acreage.

Timothy—Good.

Clover—Average yield.

Prairie Hay—Not any.

Potatoes—A total failure.

Vegetables—Good.

Apples—A total failure, due to the late spring frosts.

Other Fruits—Not any on account of spring frosts.

Cattle—The usual number in the county and in good condition.

Horses—Same as cattle.

Swine—Not a large number in the county.

Sheep—The usual supply, and in good condition.

Poultry—The usual number and in good condition.

Bees—About as usual.

Drainage—Nothing of this sort in Jefferson county.

Lands—Average value about $100.00 per acre and slowly increasing.

Report of Fair—None held.

JOHNSON.

GEORGE A. HITCHCOCK, IOWA CITY, OCTOBER 26, 1910.

General Condition of Crops and Season—Good. Small grain never was better. The season has been very peculiar, being warm in March and part of April and then cold weather set in. Hard frosts killed most of the fruit buds.

Corn—Planted late and the first stand was very light. Most of the fields were replanted and the late fall made it possible for the corn to mature well.

Oats—Stand was good and yielded extra well.

Wheat—Winter wheat yielded fine; yielding from twenty-five to forty-five bushels per acre.

Rye—The yield was good but there was not as much sown as usual.

Barley—Good yield; fine quality.

Flax—None sown.

Buckwheat—None raised.

Millet—Good.

Timothy—Hay was of extra good quality but the yield was not up to the average.

Clover—Very little lived through the winter but what did yielded well and was put up in fine condition.

Prairie Hay—None.

Potatoes—The ones planted late yielded good. All growth was made after the middle of August.

Vegetables—Not many early ones but October saw some nice late ones.

Apples—None to speak of.

Other Fruits—No fruits with the exception of a few strawberries.

Cattle—The usual supply on hand. Milch cows command a high price.

Horses—Scarce, and command a high price.

Swine—About the usual number and I have heard of no disease.

Sheep—Not many around here.

Poultry—Not so many chickens as usual on account of cold weather in May.

Drainage—A good deal of tile has been laid this season.

Lands—Range in price from $75.00 to $200.00 per acre.

Report of Fair—Fair was held August 30-September 2, inclusive. The weather proved good and we had the most successful fair we have had for many years.

JONES.

FRED W. KOOP, MONTICELLO, SEPTEMBER 28, 1910.

General Condition of Crops and Season—General condition of crops good, notwithstanding two months of very dry weather.

Corn—Fair crop. The absence of frost is putting the crop in good condition.

Oats—A good yield, and averaging fifty bushels to the acre; quality good.

Rye—Yield and quality both good.

Barley—Yield and quality good.

Sorghum—Small crop but quality is good.

Timothy—Scarce; seed demanding high prices.

Clover—Scarce.

Potatoes—Poor crop; late rains benefiting late potatoes.

Vegetables—Good yield.

Apples—Poor yield.

Other Fruits—Poor yield.

Cattle—Good condition.

Horses—Plenty of them and in good condition.

Swine—More than usual and in good condition.

Sheep—Good in sections.

Poultry—Good.

Bees—Fair crop of honey.

Drainage—Farmers are doing considerable tiling.

Lands—Lands have increased about 20 per cent in value.

Report of Fair—The Jones County Fair was held August 29-September 2. We had good weather and the fair was a financial success.

JONES.

L. W. RUSSELL, ANAMOSA, OCTOBER 20, 1910.

General Condition of Crops and Season—Very good.

Corn—Good yield and good quality. An unusual amount of corn cut up this year.

Oats—Fine quality; extra heavy.

Wheat—Good, but not much raised.

Rye—Not much grown in this section but what there was was good.

Barley—Same as rye.

Flax—Same as rye.

Buckwheat—Fair.

Millet—Fair.

Sorghum—Fine.

Timothy—Excellent.

Clover—Good crop.

Prairie Hay—Very little prairie hay grown.

Potatoes—Good.

Vegetables—Good.

Apples—Poor.

Other Fruits—The fruit was largely killed by the late frosts.

Horses—Good.

Swine—Plentiful and no cholera.

Sheep—Not so many raised but the quality is better. We have some very nice flocks.

Poultry—Very plentiful and excellent quality.

Bees—Honey plentiful.

Report of Fair—Held at Anamosa August 23-26 inclusive.

KEOKUK.

GEO. A. POFF, WHAT CHEER, OCTOBER 1910.

General Condition of Crops and Season—Splendid.

Corn—In splendid condition and there will be an average yield.

Oats—Fine condition; splendid yield.

Wheat—Small acreage; large yield.

Rye—None planted.

Barley—None planted.

Flax—None planted.

Buckwheat—None raised here.

Millet—None raised here.

Sorghum—Very little raised; quality splendid.

Timothy—The crop is light but the quality fine.

Clover—Light crop; quality fine.

Prairie Hay—Very light crop.

Potatoes—Light crop; potatoes being shipped in to supply demand.

Vegetables—Excellent.

Apples—None to speak of.

Other Fruits—Light crop; there were some excellent strawberries.

Cattle—We have a number of fine herds here and the quality is improving.

Horses—There is a good market for fine horses in this county and there are lots of them raised.

Swine—We had a splendid exhibit of the different breeds of swine at our fair.

Sheep—Quality good but not many herds here.

Poultry—There are a number of breeders of fine poultry in this neighborhood and they do quite an extensive business.

Bees—Lots of bees; large quantities of honey sold.

Drainage—On the increase. An immense amount of tile is being put in by our farmers.

Lands—Advancing; good improved land being worth from $90 to $200 per acre.

Report of Fair—Held at What Cheer September 26-29 inclusive. We had the largest attendance in the history of the society; exhibits were good; racing exceptionally good and the fair was financially a success.

KOSSUTH.

T. P. HARRINGTON, ALGONA, OCTOBER 24, 1910.

General Condition of Crops and Season—The season has been exceptionally good.

Corn—Larger acreage than usual but the stand is not up to the average on account of poor seed. The quality is excellent and the yield will be above the average.

Oats—Quality very good; yield above the average; about the usual acreage.

Wheat—Larger acreage than usual; quality good; best yield we have had in many years. Considerable winter wheat being sown this fall.

Rye—Very little grown here.

Barley—Yield is good but the acreage is not large.

Flax—Yield is good but the acreage is smaller than usual.

Buckwheat—Acreage small; average yield.

Millet—But little grown; yield good.

Sorghum—Very little grown.

Timothy—Not a heavy yield but the quality is good.

Clover—Just fair; not a heavy crop.

Prairie Hay—Fairly good crop; not much left.

Potatoes—Fair yield; good quality; local demand will take entire crop.

Vegetables—Early vegetables were badly hurt by the severe freeze in early April.

Apples—Practically none.

Other Fruits—Mostly killed by spring frosts.

Cattle—Rapidly improving in grade; special attention being paid to the dairy breeds.

Horses—Very high in price and the horse industry is growing, special attention being paid to the heavy draft types.

Swine—The raising of hogs has fallen off on account of the high cost of feed. There is a decrease in number but the breeders are active in improving their breed.

Sheep—This industry is on the increase and results are very satisfactory.

Poultry—A very marked increase in the attention being paid to poultry raising. There are ten times more breeders of pure bred poultry in the county now than there was three years ago.

Bees—Not extensively raised although they bring good results.

Drainage—Has gone forward by leaps and bounds. There are about 50 public drains, aggregating a cost of about $1,000,000, now under contract and private drains supplement the ones put in by the public.

Lands—Have advanced in value from $10 to $25 per acre the past year but are still below the prices of land similarly favored in other localities. Increase in price is bound to follow.

Report of Fair—Held September 13-16 inclusive. The exhibits were better than ever before except in the fruit department. The attendance was lowered on account of rain but we will pay all bills and have something to pay on the indebtedness.

LEE.

CHRIS HAFFNER, DONNELLSON, OCTOBER 4, 1910.

General Condition of Crops and Season—Season very favorable; crops good.

Corn—Quality good; average from 50 to 70 bushels per acre.

Oats—Good crop; quality and yield best we have had in years.

Wheat—Quality good; yield about one-half crop.

Rye—Very little grown.

Barley—None grown.

Flax—None grown.

Buckwheat—Very little grown.

Millet—None.

Sorghum—Good crop.

Timothy—Quality fine; crop fair.

Clover—Good crop.

Prairie Hay—Not any.

Potatoes—Good quality; light crop.

Vegetables—Good.

Apples—Total failure on account of spring frosts.

Other Fruits—Not any.

Cattle—Short Horns and Polled Angus predominate.

Horses—Roadsters and Percherons predominate.

Swine—Duroc Jersey, Chester Whites and Poland Chinas predominate.

Sheep—Shropshires and Delaines predominate.

Poultry—Great interest taken in this industry; all breeds represented.

Bees—Very few; poor season for them.

Drainage—Good.

Other Industries—Plenty of room for factories.

Lands—Prices range from $100 to $150 per acre.

Report of Fair—Held at Donnellson, September 7, 8, and 9. Exhibits in all departments were very good with the exception of fruit. The attendance was very good despite the rainy weather the first days of the fair. The fair was a success in every way.

LEE.

JOHN WALLJASPER, WEST POINT, OCTOBER 24, 1910.

General Condition of Crops and Season—The general condition of crops is from fair to good. The season was backward and cold in the spring and dry in the summer.

Corn—Larger acreage than last season; damaged in some parts of the county by severe storms and hail. Yield varies from 40 to 70 bushels per acre, owing to the quality of the land.

Oats—Good; good yield and excellent quality.

Wheat—Good quality; fair crop.

Rye—Not much sown; fair yield and quality.

Barley—Not much sown; quality fair.

Flax—I know of none.

Buckwheat—Very little sown; quality good.

Millet—But little sown; quality and yield good.

Sorghum—Quality not quite so good as in former years on account of drouth and storms. The yield is fair.

Timothy—Good; hay is fine.

Clover—Both hay and seed good quality and yield.

Prairie Hay—None.

Other Grains and Grasses—Very little alfalfa grown; blue grass good.

Potatoes—Fair yield; good quality.

Vegetables—Good yield; fine quality.

Apples—The late frost nipped all the buds so there are practically no apples.

Other Fruits—Same as apples.

Cattle—Quite a number fed and shipped; quality good. The herds are being improved every year.

Horses—Quality improving each year. The high price of horses makes their breeding a paying proposition for the farmers.

Swine—This industry has picked up wonderfully the past year.

Sheep—There is a great demand for sheep in this county. Quite a number of farmers are engaged in this industry and they seem to be well satisfied with results.

Poultry—This industry is enthusiastically kept up by the poultry breeders and it is bound to become one of the most popular industries in the county.

Bees—Not many kept.

Drainage—Good deal of draining being done, both by individual land owners and by the drainage commission.

Other Industries—Good.

Lands—Worth from $40 to $200 per acre owing to the location and improvements.

Report of Fair—Held at West Point September 27, 28 and 29. It was the best fair we have had for ten years; all departments were well filled; races good; weather fine; and attendance good.

LINN.

J. B. TRAVIS, MARION, OCTOBER 10, 1910.

General Condition of Crops and Season—Considering the extreme drouth the crops are good.

Corn—Eighty per cent of last year's yield but the quality is better.

Oats—Best crop we have had for years.

Wheat—But little raised; crop good; yield from 20 to 35 bushels per acre.

Rye—But little raised; average crop.

Barley—None raised.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—But little raised.

Timothy—Light crop; 75 per cent.

Clover—Light crop; 75 per cent.

Prairie Hay—But little raised.

Potatoes—Badly damaged by drouth.

Vegetables—Badly damaged by drouth.

Apples—None on account of spring frosts.

Other Fruits—Very light crop.

Cattle—Not many compared with other years. As a rule prices are high.

Horses—About as many as usual; prices high.

Swine—Not a very great surplus.

Sheep—Very few in this locality.

Poultry—Not a great surplus.

Bees—Very few.

Drainage—Farm lands are pretty well tiled.

Lands—Prices range from $90 to $175 per acre.

Report of Fair—Held at Marion September 20-23 inclusive. We paid our purses and premiums in full although it rained on Thursday and we were obliged to declare off on Friday, thereby reducing our gate receipts fully $1,200.00. We feel that our fair is growing in favor with the people.

LINN.

E. E. HENDERSON, CENTRAL CITY, SEPTEMBER 30, 1910.

General Condition of Crops and Season—Good.

Corn—About 75 per cent of a crop; more than usual being cut for fodder.

Oats—Splendid crop; excellent quality; fine yield.

Wheat—Best quality and yield we have had for a couple of years.

Rye—Fair; not much raised.

Barley—Not much grown this year; average yield.

Flax—None grown.

Buckwheat—Very little grown.

Timothy—Light crop.

Clover—About 2-3 of a crop; quality good.

Potatoes—Very light crop; affected by the drouth.

Apples—Practically none.

Other Fruits—Light crop.

Cattle—Late rains are making good pastures and cattle are in good condition for winter. Good milch cows are scarce and high in price. There are fewer feeders than usual.

Horses—Good horses scarce and high priced.

Swine—About the average number raised; no disease.

Sheep—Flocks are increasing each year.

Drainage—Very large amount of land being tiled.

Lands—Higher, prices ranging from $90 to $135 per acre.

Report of Fair—Held at Central City September 6, 7, 8 and 9, and was one of the most successful fairs in the history of the society. Exhibits were good and the attendance was the best we have had in seventeen years. We had no racing.

LOUISA.

J. R. SMITH, COLUMBUS JUNCTION, SEPTEMBER 15, 1910.

General Condition of Crops and Season—The general condition of crops is satisfactory. The spring was dry and cool, unfavorable to the growth of grass and early planted grains and vegetables.

Corn—Above the average in acreage and condition. The only drawback to an increased yield is that the stand is below normal; it is ripening slowly.

Oats—Excellent crop, both as to quality and yield.

Wheat—Not much raised; quality medium; yield fifteen to twenty-five bushels per acre.

Rye—Not much sown; quality fair.

Barley—Very little sown; quality good. Some sown with oats for feed.

Flax—None raised.

Buckwheat—But little sown.

Millet—But little sown; growth good.

Sorghum—Ranks with corn, limited acreage. Sorghum is a staple though limited crop.

Timothy—The growth was retarded by the cold dry spring; quality excellent.

Clover—Heavier crop than timothy. Timothy and clover are generally sown together for hay or pasture.

Prairie Hay—Scarcely any grown.

Potatoes—Good quality; yield will not exceed one-half an average crop.

Vegetables—Generally good; cabbage badly damaged by worms.

Apples—No apples on account of the hard freeze in early April after the buds had formed.

Other Fruits—Same as apples. There were a few strawberries.

Cattle—In good flesh and healthy.

Horses—In excellent condition. The breeding of horses is one of the most profitable industries of this county.

Swine—This is a good hog county and they are in good, thrifty condition.

Sheep—But few raised; flocks are small but they are in excellent condition.

Poultry—A big crop and in good, healthy condition.

Bees—Not many kept but what there are are in fine condition. The honey output will be short.

Drainage—The county has done a good deal of draining and individuals have also put in a good deal of tile drainage.

Other Industries—Very good.

Lands—Steadily advancing. The best lands are bringing from $100 to $200 per acre, owing to the improvements, etc.

Report of Fair—Held at Columbus Junction, September 6-9, inclusive. Exhibits good in all lines; weather was fine; attendance large, and the financial returns were very satisfactory.

LOUISA.

J. D. DEIHL, WAPELLO, SEPTEMBER 13, 1910.

General Condition of Crops and Season—Rather late spring with cold weather after vegetation was well started. Fine weather prevailed during the corn growing season.

Corn—Best prospects in the memory of the oldest inhabitants. We may not have any phenomenal yields but every field will yield well and a high average for this community will be established.

Oats—Best crop in years; quality fine. A number of fields averaged 70 bushels per acre and over.

Wheat—Quality good; average yield from 15 to 20 bushels per acre.

Rye—Very little planted; generally a poor yield.

Barley—Do not know of any.

Flax—None grown.

Buckwheat—Very little grown.

Millet—Best ever raised in this community. Possibly too rank a growth to make first class forage.

Sorghum—Average crop planted; yield above the average.

Timothy—Good yield and good quality but the acreage is so small that there will be a scarcity.

Clover—Fine year for clover. The stands were very heavy and more than usual harvested for seed.

Prairie Hay—Very little in this community but the quality and yield is good.

Other Grains and Grasses—Sweet corn grown to quite an extent, with extra fine crops.

Potatoes—Very little grown except for home consumption. The yield is below the average.

Vegetables—None grown except in home gardens.

Apples—None whatever.

Other Fruits—Very little.

Cattle—Usual number; high prices prevailing.

Horses—Better quality raised every year; prices good.

Swine—High prices last winter caused many farmers to sell their brood sows, resulting in a smaller number of pigs this summer.

Sheep—Comparatively few handled in this vicinity.

Poultry—Farmers are taking greater interest in their poultry—securing better stock and raising larger numbers.

Bees—Very few kept.

Drainage—A great deal of drainage is being done. About twelve drainage districts have been established in this county recently and several hundred thousand dollars are being spent in such work.

Other Industries—Farming is practically the only industry.

Lands—Prices are steady at the top reached last spring.

Report of Fair—No fair this year.

LUCAS.

J. C. WILLIAMSON, CHARITON, DECEMBER 7, 1910.

General Condition of Crops and Season—The county has suffered from drouths, causing a shortage in most crops.

Corn—Owing to the poor quality of seed a large acreage was replanted but a good fall allowed the bulk of the crop to mature. The yield is from 20 to 50 bushels per acre. There was more corn cut for fodder this year than ever before.

Oats—Good crop and of extra good quality.

Wheat—Most of the wheat was winter killed. Quite a good deal was sown this fall.

Rye—Very little sown.

Barley—None.

Flax—None.

Buckwheat—Very little.

Millet—Millet was very light because of the drouth.

Sorghum—Very little.

Timothy—About one-half crop, or three-fourths tons per acre. The quality was excellent but there was very little cut for seed.

Clover—Not a large acreage but a fair crop, some fields making a second crop.

Prairie Hay—Very little.

Other Grains and Grasses—Some very small fields of alfalfa. Pastures were short on account of drouth.

Potatoes—About one-half crop and rather small.

Vegetables—Where vegetables were given good attention they were good, otherwise poor.

Apples—None.

Other Fruits—Frost killed most of the fruit and drouth killed the remainder.

Cattle—Not very plentiful and in good demand. Dairy cattle selling very high. Not many cattle on feed.

Horses—Fair lot of colts but horses are not selling as well as a year ago.

Swine—The supply of hogs on hand is not large, although there is a nice lot of young pigs. Stock hogs are selling very high and there are a number of registered herds in the county. No disease reported.

Sheep—Quite a number of farmers are keeping small flocks of sheep. Breeding sheep are selling high but stock sheep are cheap. Wool has been low all year.

Poultry—Quite an interest taken in breeding pure bred poultry. Prices are good and there are the usual number in the county.

Bees—Very few bees.

Drainage—Very little tiling being done as the natural drainage is good.

Other Industries—Doing good business.

Lands—Lands are being better farmed, more attention being paid to the rotation of crops and better improvements are being made. Good land is selling from $150 to $200 and there is a good deal changing hands. There are a few farms for rent.

Report of Fair—No fair held.

LYON.

CHAS. W. BRADLEY, ROCK RAPIDS, OCTOBER 18, 1910.

General Condition of Crops and Season—Good.

Corn—Large acreage; good quality; average probably 50 bushels per acre.

Oats—Yield machine measure from 30 to 40 bushels; quality first class.

Wheat—Small acreage of winter wheat; quality and yield extra good. Small acreage of spring wheat; good quality and yielded from 20 to 30 bushels.

Rye—Very small acreage.

Barley—Yield 30 to 45 bushels; very best quality.

Flax—Little raised.

Buckwheat—Small acreage; good quality.

Millet—Small acreage; light yield.

Sorghum—Not any.

Timothy—Light crop; hurt by worms.

Clover—Medium crop; cut for seed; fair yields.

Prairie Hay—Light yield.

Potatoes—Fair to medium crop. Late potatoes are of good quality and yielded well.

Vegetables—Good yield.

Apples—Killed by late frost.

Other Fruits—Fair crop of small fruit.

Cattle—No disease; good quality; fair condition and the number and quality increasing each year.

Horses—Same as cattle.

Swine—Same as cattle.

Sheep—Same as cattle.

Poultry—Same as cattle.

Bees—In good condition but not many kept.

Drainage—The natural drainage is first class but there has been a larger amount of tile put in this year than ever before.

Other Industries—Creameries doing a heavy business.

Lands—Selling from $100 to $175 per acre.

Report of Fair—Held at Rock Rapids August 30, to September 2, 1910.

MADISON.

A. L. FOSTER, WINTERSET, SEPTEMBER 20, 1910.

General Condition of Crops and Season—The season has been full of extremes. There has been no frost up to date.

Corn—Fairly good; not very well advanced on account of dry weather. The yield will probably be about 75 per cent and the quality fair.

Oats—Extra good quality and yield good in most places.

Wheat—Good quality; yield varying from 15 to 30 bushels per acre. There were some pieces of fall wheat which yielded from 35 to 40 bushels per acre.

Rye—Not very much grown.

Barley—Good quality; fair yield.

Flax—None grown.

Buckwheat—None sown.

Millet—Too dry to be good.

Sorghum—But very little grown.

Timothy—Hay very fine; yielding about 60 per cent. Not very much threshed for seed.

Clover—Quality of hay good; yield of seed about 75 per cent. The crop is generally short.

Prairie Hay—Not much prairie hay in the county any more.

Other Grains and Grasses—Blue grass was quite short on account of dry weather but the recent rains have been a great help and pastures are improving.

Potatoes—Only about a fourth of a crop on account of dry weather and bugs. The crop being almost a failure in some localities.

Vegetables—Not very good, owing to the extreme dry weather.

Apples—A failure; buds all killed by the late freeze in May.

Other Fruits—A few grapes but no other fruits to speak of.

Cattle—Not in very good condition on account of the short pastures and the scarcity of good stock.

Horses—Not very plentiful but the demand is good and prices of good draft horses are high.

Swine—Not a great many young pigs in the county. Have heard of no disease among the hogs this summer.

Sheep—Quite a good many farmers have small herds of good quality.

Poultry—Every farmer has a goodly number of chickens but there are not many turkeys. Eggs are in great demand and command a high price.

Bees—Not very many kept. The season has been too dry for honey.

Drainage—A great deal of tile is being put in by the farmers.

Other Industries—This is principally an agricultural county.

Lands—Advancing in price. Some eighty acre tracts have sold around $200 per acre but there is not as much land changing hands as formerly.

Report of Fair—Held at Winterset September 13-15 inclusive. The horse exhibit was good; not many cattle shown, on account of their being in poor condition, and exhibits in all the other departments were poor.

MAHASKA.

C. F. MOMYER, NEW SHARON, SEPTEMBER 24, 1910.

General Condition of Crops and Season—Crops in general were never better. The season has been ideal, although it was a little dry for good pastures.

Corn—Above the average, both as to quality and yield.

Oats—Quality and yield good.

Wheat—Best in years; acreage larger than common.

Rye—Very little sown.

Barley—Very little sown.

Flax—None.

Buckwheat—None.

Millet—Very little; too dry.

Sorghum—Larger acreage than usual; quality excellent.

Timothy—Light crop but good quality.

Clover—Splendid.

Prairie Hay—None.

Other Grains and Grasses—Average.

Potatoes—Late crop poor; early ones splendid.

Vegetables—Good.

Apples—None.

Other Fruits—Very poor with the exception of strawberries.

Cattle—There is a shortage of good feeders and prices are high.

Horses—Large supply, and demand for all grades is good.

Swine—Average number of pigs; prices good.

Sheep—More than usual and they are in good demand.

Poultry—Excellent crop of chickens; turkey crop light.

Bees—Poor.

Drainage—Very good.

Lands—"Out of sight."

Report of Fair—Held at New Sharon September 20-23. Exhibits were larger than ordinary and the attendance was good. We were rained out the third day and the Association declared the fair off.

MARION.

CHAS. PORTER, PELLA, OCTOBER 31, 1910.

General Condition of Crops and Season—On the whole the crops are in better condition than they have been for 25 years. The season started out dry, and so remained throughout the farming season. Recently we have had some fine rains.

Corn—Generally a good stand; acreage large; yield good, and quality excellent.

Oats—Large acreage sown and the yield and quality was excellent. The straw as a whole is better than we have ever seen before.

Wheat—Winter wheat produced a good yield of excellent quality. Spring wheat was of good quality and yielded from 15 to 24 bushels per acre.

Rye—Fine quality but not much raised.

Barley—Excellent quality but neither the yield nor the acreage was large.

Flax—None grown.

Buckwheat—Yield fair but not much sown.

Millet—Not much sown and the season was too dry for a heavy crop.

Sorghum—Larger acreage than usual; quality fine. There was a big crop of seed harvested, netting about $15.00 per acre alone.

Timothy—Short crop but the quality was very fine.

Clover—First crop, where not frozen out, was successfully saved and the quality was very good. The second crop was also good. Seed and hay well saved.

Prairie Hay—None.

Other Grains and Grasses—Blue grass is our main pasture.

Potatoes—Good results were procured where surface cultivation was carried out.

Vegetables—Both early and late ones good.

Apples—None raised on account of hard freezes.

Other Fruits—Grapes were the only small fruit this year. Peach trees were badly killed.

Cattle—More dairy cattle are being raised. All beef breeds are being improved in quality.

Horses—Draft breeds raised principally. Each year we can see a marked improvement in the number and quality of horses.

Swine—More pure breds of all the different breeds can be found in the county than formerly.

Sheep—Shropshires predominate. I think we will see more sheep in the county before long.

Poultry—The American breeds are prevalent and a great many are raised in this county.

Bees—Not many kept. The season has been too dry for much honey.

Drainage—Most of our flat and slough lands are tiled. A great deal of tile put in this year.

Lands—Farm lands are selling from $90 to $225 per acre and there is quite a little changing hands.

Report of Fair—Fair held October 3-6 inclusive. There were excellent exhibits in the agricultural department but the exhibit of live stock was not as good as usual. Our fair was a success from an educaitonal standpoint.

MARSHALL.

H. M. WEEKS, RHODES, OCTOBER, 1910.

General Condition of Crops and Season—At this date the crops are generally in good condition.

Corn—Prospects are very good for a good corn crop in this locality. Some damage was done by the drouth but the crop will be above the average both as to quantity and quality.

Oats—The best crop we have had for several years; yield and grain being heavier and of better quality. The crop was saved in excellent shape.

Wheat—Not much raised; spring wheat yielded from 15 to 20 bushels per acre and winter wheat yielded as high as 38 bushels. Some farmers are putting in a crop of winter wheat this fall.

Rye—Scarcely any raised in this district.

Barley—Hardly any raised in this locality.

Flax—Do not know of a field of flax in this vicinity.

Buckwheat—None raised.

Millet—Only raised on land that was too wet in the spring for other crops.

Sorghum—None.

Timothy—Somewhat lighter crop than usual but the quality is fine. and it was put up in good shape.

Clover—The new seeding was damaged some by the extreme cold weather last winter but nevertheless the crop was unusually good and was secured in fine condition. Late rains made a good second growth and that saved for seed is making a good yield.

Prairie Hay—None except sloughs.

Other Grains and Grasses—Some farmers are experimenting with alfalfa and it seems to do fairly well.

Potatoes—Early potatoes did fairly well but late ones are a very light crop, probably not more than 50 per cent of an ordinary crop.

Vegetables—Fine quality and as a rule the yield was good.

Apples—Almost a failure; a few Duchess and other early varieties but no winter apples.

Other Fruits—No peaches, many of the trees killed; pears light; no plums; one-half crop grapes; small fruits fairly good.

Cattle—A leading industry of this district. Stock is constantly being improved. We have had no disease this year and while the pastures have been short the cattle are looking well and will go into winter in good condition.

Horses—The quality of horses raised in the counties of Marshall, Story and Jasper is not to be excelled in the state of Iowa. The heavy draft breeds are raised more extensively than any others. There is a shortage of horses on the market and the prices range high.

Swine—Special attention given to improved breeding. The Duroc Jerseys and Chester Whites predominate; all are in good, healthy, condition. Notwithstanding the cold, wet weather in the early spring the stock of young pigs is very good.

Sheep—Not kept to any great extent. Cotswolds and Shropshires are the leading breeds.

Poultry—More attention is being paid to improving the breeds, and more time is also given to the care of poultry. The exhibit of poultry at our fair was better than ever this year.

Bees—What few bees were kept were mostly killed last winter.

Drainage—Much tiling is being done and the county put in a large ditch the last year which drained hundreds of acres of land.

Other Industries—Good.

Lands—Values high and increasing. Many sales have been made at prices ranging from $150 to $225 per acre. Not much land that has any improvements is selling for less than $100.

Report of Fair—The Eden District Fair was held September 20-23 inclusive. Rain interfered somewhat; the show of stock was fine; corn exhibit very good; fine arts well filled, and altogether we were well satisfied with our fair.

MARSHALL.

W. M. CLARK, MARSHALLTOWN, OCTOBER 25, 1910.

General Condition of Crops and Season—While the farmers of Marshall County have had a fairly prosperous year the conditions, in general, have not been up to the usual standard.

Corn—Not over 80 per cent of a usual crop.

Oats—Good crop, fully up to former years.

Wheat—Winter wheat was fine; yielding from 25 to 35 bushels per acre and of good quality. Spring wheat was above the average.

Rye—None raised.

Barley—Not much raised but the quality and yield were good.

Flax—None raised.

Buckwheat—Not enough raised to report on.

Millet—Good, but not much raised.

Sorghum—Only raised for private consumption.

Timothy—Fully an average crop.

Clover—Fair crop; second crop very fine; yield of seed fair.

Prairie Hay—None.

Potatoes—Early potatoes were a light crop; late ones were much better with an average yield.

Vegetables—Good.

Apples—Nearly a failure, owing to late frost.

Other Fruits—Poor.

Cattle—Less than the average number in the county but the grades are being gradually improved. Cattle are in good condition.

Horses—This industry is increasing, especially in the driving horse class. There are more good horses in the county than ever before.

Swine—The high prices caused farmers to sell many of their brood sows; still we have about the average number and the quality was never better. More farmers are breeding pure bred swine than ever before.

Sheep—The sheep industry is gaining, many farmers are now keeping small flocks of good sheep.

Poultry—One of the leading industries with the small farmer, and many of the larger ones. The poultry show at our fair was very large and all the leading breeds were represented.

Bees—But few kept.

Drainage—Some county work is being done in the western part of the county and the individual farmers are tiling out their wet lands.

Lands—Constantly increasing in value.

Report of Fair—Held at Marshalltown September 12-16 inclusive. We had a larger show and better attendance than ever before although two days of bad weather kept many people away. The total attendance was 28,000.

MILLS.

I. J. SWAIN, MALVERN, SEPTEMBER 27, 1910.

Gneral Condition of Crops and Season—The crop season opened under the most favorable conditions; plenty of moisture and good temperature for germination; frequent rains up to the middle of May but about the middle of June a drouth set in and continued until August, at which time general rains rescued the crops from failure.

Corn—Probably 30 bushels per acre would be a fair estimate for the entire county.

Oats—Conceded to be far above the average both as to quality and quantity. The majority of fields yielding from 50 to 60 bushels.

Wheat—The best we have had in 20 years; the yields varying from 22 to 29 bushels for spring wheat and from 27 to 40 for winter varieties.

Rye—Very little grown.

Barley—Not much sown.

Flax—None grown.

Buckwheat—None raised.

Millet—Quality good, but very little grown.

Sorghum—None raised.

Timothy—Very light crop, say one to one and one-half tons per acre.

Clover—Good yield, at least normal. The second cutting promises an extraordinary yield of seed.

Prairie Hay—About one-half the usual crop.

Potatoes—Below average; small in size but of good quality.

Vegetables—All garden vegetables good yield and of good quality.

Apples—Failure.

Other Fruits—Strawberries yielded well; other fruits a light crop.

Cattle—Generally thrifty and in good flesh. Considerable complaint of sore mouth but disease yields readily to treatment.

Horses—This industry is in very gratifying condition and is being intelligently and vigorously pushed in all lines. Attention is mostly given to the draft breeds. No disease is reported from any locality and health conditions are above normal.

Swine—This branch of farm production is also being boosted with the utmost vigor and energy. The county seems to be entirely free from disease.

Sheep—More attention is given to the breeding and feeding of sheep than formerly.

Poultry—Thousands of dollars worth of poultry and eggs are marketed by the thrifty farmers of the county. We have the best in all breeds.

Bees—None kept.

Drainage—Hundreds of acres are being annually reclaimed.

Other Industries—Progressing.

Lands—Advancing in value by leaps and bounds; lands selling at $125 to $200 per acre.

Report of Fair—Fair held at Malvern on August 2-5 inclusive, and was one of the best in the history of the association. The weather was fine and the attendance was the largest we have ever had.

MITCHELL.

ARTHUR A. KUGLER, OSAGE, OCTOBER 27, 1910.

General Condition of Crops and Season—Spring season late; summer dry; fall fine.

Corn—Stand comparatively light; quality good; acreage about average; yield about 40 bushels per acre.

Oats—About the usual acreage; good quality; yield from 25 to 32 bushels per acre.

Wheat—Extra good quality and best yield we have had in many years.

Rye—Quality very good but not a large acreage.

Barley—Acreage somewhat less than usual; average yield; extra good quality.

Flax—Good quality; limited acreage; average yield.

Buckwheat—Practically none raised in the county.

Millet—Only raised in small patches.

Sorghum—Don't know of any in this county.

Timothy—Very light crop on account of dry weather. Mostly cut for hay.

Clover—Very little raised for seed; the hay crop was not quite up to the average.

Prairie Hay—Practically none raised.

Potatoes—Early ones a very light crop because of the dry weather. Later ones were a very good crop and of extra fine quality.

Vegetables—Nearly all varieties were of good quality and yielded well.

Apples—Practically none.

Other Fruits—Short crop of strawberries and raspberries; most other fruits were killed by spring frosts.

Cattle—Many farmers and breeders are getting blooded herds. Short Horns, Black Polled, Herefords, and Holsteins predominate. There are about the average number in the county.

Horses—Percheron the principal breed. Standard improving.

Swine—Poland Chinas and Duroc Jerseys are the most prominent breeds. The number of hogs in the county is considerably reduced by reason of the high price of feed the past two years.

Sheep—Cotswold and Shropshires the prevalent breeds. There is a slight increase in the number being raised.

Poultry—Larger numbers and the breeds are improving.

Bees—Very few stands in this county; not enough honey produced to supply the home demand.

Drainage—Considerable is being done in the drainage line by individuals but the county is doing nothing.

Other Industries—Eight or nine creameries doing a good business.

Lands—Have advanced from $20 to $30 per acre in the past year and many farms are being transferred.

Report of Fair—Held at Osage September 27, 28, and 29th. The attendance was first rate; exhibits were short in some departments but they were of the best quality. We consider the fair a success from every point of view.

MONONA.

A. W. BURGESS, ONAWA, SEPTEMBER 22, 1910.

General Condition of Crops and Season—Crops good; season favorable.

Corn—Fifty bushels.

Oats—Fifty bushels.

Wheat—Twenty to twenty-five bushels.

Rye—No rye.

Barley—None.

Flax—None.

Buckwheat—Not any.

Millet—Very little raised.

Sorghum—Very little grown.

Timothy—Very little.

Clover—But little.

Prairie Hay—Crop light and quality poor.

Potatoes—Acreage not as large as usual and crop is not up to the average.

Apples—None.

Other Fruits—Not any.

Horses—No surplus; bought up and shipped out.

Swine—Not as many as usual.

Sheep—Very few.

Poultry—Usual.

Drainage—Drainage ditches are being put in over the western part of the county.

Lands—Some changing hands but not much. Prices range from $50 to $150 per acre.

Report of Fair—Held at Onawa September 13-16 inclusive. Rain cut down the attendance.

MONROE.

J. T. PORTER, ALBIA, OCTOBER 7, 1910.

General Condition of Crops and Season—Crops well saved.

Corn—Mostly cut for fodder and shredding. Average yield about 40 bushels.

Oats—Excellent quality and an average yield of 35 bushels.

Wheat—All saved; good quality; yield about 22½ bushels per acre.

Rye—Good quality; yield about 27½ bushels per acre.

Barley—Not sufficient raised to report.

Flax—None raised.

Buckwheat—None grown; too dry.

Millet—None sowed; too dry.

Sorghum—Not enough to report on.

Timothy—Light yield on account of drouth; quality excellent.

Clover—Too dry for clover.

Prairie Hay—Not any.

Other Grains and Grasses—None.

Potatoes—Very light crop; good quality.

Vegetables—Short crop.

Apples—Not any, because of the early frost.

Other Fruits—None to speak of.

Cattle—Stock cattle all thin; very few being fed.

Horses—In good condition and command good prices.

Swine—In good condition; prices good.

Sheep—Not many in the county; quality good; prices good.

Poultry—Good condition; prices are high and poultry sells readily.

Bees—But few in the county.

Drainage—Very little tile drainage done this year on account of the drouth.

Lands—Prices ranging from $50 to $150 per acre, according to the improvements and location.

Report of Fair—Held at Albia on September 27-30 inclusive. This was our second fair in twenty years and it was a success. We made a little money and besides paid $1,136.25 in premiums.

MUSCATINE.

W. H. SHIPMAN, WEST LIBERTY, OCTOBER 25, 1910.

General Condition of Crops and Season—Early season was backward but the balance of the season was very favorable. Crops are generally in excellent condition.

Corn—Average acreage; good yield, and best quality we have had for several years.

Oats—Usual acreage; good quality; yield from 50 to 85 bushels per acre.

Wheat—Light acreage; yield and quality good.

Rye—Small acreage; yield and quality first-class.

Barley—Not the usual acreage; yield and qaulity fine.

Flax—None raised.

Buckwheat—None raised.

Millet—But little grown; quality good.

Sorghum—Not any.

Timothy—Good average crop; quality fine.

Clover—Above the average crop.

Prairie Hay—None.

Other Grains and Grasses—Alfalfa is proving satisfactory to all who have tried it. Three or four crops being cut with a yield from 5 to 7 tons. Makes very good pasture for hogs.

Potatoes—Short crop of early potatoes; late varieties were of fine quality and yielded well.

Vegetables—Very satisfactory crop.

Apples—None.

Other Fruits—Strawberries were a good crop; all other fruits were a failure.

Cattle—Interest in beef breeds not up to former years. Good demand for milch cows.

Horses—Increased interest taken in the draft horses. There is a good market for all good animals.

Swine—Crop of pigs fully up to former years.

Sheep—More than formerly.

Poultry—Interest in poultry raising is increasing.

Bees—Very satisfactory yield of honey.

Drainage—Tile being laid and open ditches constructed.

Other Industries—Progressing.

Lands—The price of land seems to be limited only by what the owner asks.

Report of Fair—Fair held at West Liberty on August 22 to 25, and was a success in every way. A new amphitheater was built which cost $2,500.

MUSCATINE.

H. WILDASIN, WILTON JUNCTION, OCTOBER 21, 1910.

General Condition of Crops and Season—Crops in general are good. Season was warm in the early spring; then turned cold for some little time and afterwards warm dry weather set in until fall.

Corn—Above the average I think.

Oats—Above the average.

Wheat—More than the usual average.

Rye—Average.

Barley—Average.

Flax—Not any raised.

Buckwheat—Very little raised.

Millet—Not much grown.

Sorghum—What there was of it was good.

Timothy—About one-half a crop.

Clover—Fair crop.

Prairie Hay—None.

Other Grains and Grasses—Don't know of any others.

Potatoes—Fair crop.

Vegetables—Fair crop.

Apples—None.

Other Fruits—Practically none with the exception of a few strawberries.

Cattle—About as usual.

Horses—About average.

Swine—Average.

Sheep—Average.

Poultry—Above the average.

Bees—About as usual.

Drainage—Can't tell.

Report of Fair—Held at Wilton Junction September 13-16 inclusive and was a very good fair. Rain interferred somewhat but we came out ahead.

O'BRIEN.

J. B. MURPHY, SUTHERLAND, OCTOBER 22, 1910.

General Condition of Crops and Season—Good.

Corn—Above the average.

Oats—Averaged 60 to 70 bushels per acre.

Wheat—Good, but not much raised.

Rye—Very little raised.

Barley—Yielded 40 to 50 bushels per acre.

Flax—Not much raised.

Buckwheat—None.

Millet—Very little raised.

Sorghum—None.

Timothy—One-half the usual crop.

Clover—Good.

Prairie Hay—Short crop.

Other Grains and Grasses—Pastures are short but extra good.

Potatoes—Early ones poor; late ones excellent.

Vegetables—Good.

Apples—None.

Other Fruits—Poor crop.

Cattle—About the usual number.

Horses—Not the usual number; prices high.

Swine—Average.

Sheep—Average number.

Poultry—About as usual.

Bees—Below the average.

Drainage—Fairly well drained.

Other Industries—Good.

Lands—Advanced $25 per acre, selling from $60 to $200 per acre.

Report of Fair—Held at Sutherland on September 7, 8 and 9. The weather was good and the attendance large.

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D. D. STETT, CLARINDA, OCTOBER 18, 1910.

General Condition of Crops and Season—Season was very peculiar, first warm, then cold, then hot and dry. The fall has been fine so far.

Corn—Acreage about average; some extra good corn, some very poor.

Oats—Extra good quality; yield from 35 to 65 bushels per acre. The straw was fine enough for hay.

Wheat—Extra good quality. The best spring wheat we have had for twenty years.

Rye—Not much raised.

Barley—Very little sown.

Flax—None raised.

Buckwheat—Very little grown.

Millet—Limited amount raised.

Sorghum—Good.

Timothy—Quality extra fine; yield light.

Clover—Fair to good yield; seed crop good.

Prairie Hay—Very little in the county but what there was was of good quality and a fair crop.

Other Grains and Grasses—Some very fine speltz grown for hog feed.

Potatoes—Light crop of both early and late potatoes.

Vegetables—Early gardens were very good; some fine late cabbage and turnips.

Apples—The first failure we have had in thirty years.

Other Fruits—A few blackberries; strawberries, raspberries and grapes.

Cattle—About the normal amount of cattle and the quality is improving each year. There are not as many being fed as usual.

Horses—Several farmers have bought full blooded brood mares. There are a good many fine young draft horses and the farmers are interested in feeding good horses for market.

Swine—We have them of the best quality, mostly Poland Chinas and Durocs. There are not as many hogs in the county as usual on account of scarcity of brood sows.

Sheep—This industry is growing. There are several small flocks of good sheep in the county.

Poultry—People are raising poultry quite extensively in this vicinity and many good flocks of most of the different varieties can be found.

Bees—Not many kept.

Drainage—More tile being used each year. Natural drainage is good over the county.

Other Industries—Progressing.

Lands—Land selling from $100 to $200 per acre; some not to be had at any price.

Report of Fair—Held at Clarinda on September 12 to 16. There was an excellent display of stock and a fine line of farm machinery, etc. But for the rain on Thursday the fair would have been a success in every way.

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A. W. GOLDBERG, SHENANDOAH, AUGUST 20, 1910.

General Condition of Crops and Season—

Corn—Fairly good crop.

Oats—Better than the average.

Wheat—Above the average.

Rye—Small acreage but good.

Barley—None raised.

Flax—Not any.

Buckwheat—None.

Millet—Small acreage but good.

Sorghum—Same as millet.

Timothy—Below the average.

Clover—Good; above normal.

Prairie Hay—Very little but good.

Potatoes—Small crop.

Vegetables—Poor.

Apples—Killed by frost.

Other Fruits—Same as apples.

Cattle—Normal; good condition.

Horses—Plenty and high priced.

Swine—Short crop.

Sheep—Very few handled.

Poultry—Average.

Bees—Very few.

Drainage—Good.

Lands—Very little on the market but what little there is sells around $200 per acre.

Report of Fair—Held at Shenandoah. There were larger crowds than ever; larger receipts and good exhibits. In fact it was the best fair we ever have had.

PLYMOUTH.

GEO. M. SMITH, LEMARS, NOVEMBER 30, 1910.

General Condition of Crops and Season—Quality and quantity of crops above the average. Impossible to better the weather conditions.

Corn—Very good quality; 40 bushels to the acre a fair average.

Oats—Good, better than last year both as to yield and quality.

Wheat—Berry very well developed; perhaps the yield was not so large per acre as last year but the quality was better.

Rye—Not much planted.

Barley—Quality very fine; yield not as large as last year.

Flax—None planted.

Buckwheat—None.

Millet—Good yield and good quality.

Sorghum—None.

Clover—Not as large a yield as in former years.

Prairie Hay—Short.

Potatoes—Yield is sufficient here; late potatoes doing the better.

Vegetables—Below the average yield.

Apples—Early frosts caused heavy damage to the apple crop.

Other Fruits—No good.

Cattle—Are now in fine condition at the present time although they have been thin all summer on account of short pasturage.

Horses—Horses are in good demand and command high prices.

Swine—Plentiful; no cholera; prices high.

Report of Fair—No fair held in Plymouth county. A meeting was called in August but there was no attendance.

POCAHONTAS.

J. P. MULLEN, FONDA, SEPTEMBER 28, 1910.

Corn—Good; better than average acreage; yield from 30 to 50 bushels per acre.

Oats—Fine; best we have had in years; average yield from 30 to 60 bushels.

Wheat—Fair, not much sown.

Rye—Good; small acreage.

Barley—Good; acreage small.

Flax—Good yield; poor quality.

Buckwheat—Small acreage.

Millet—Fine.

Sorghum—Fine.

Timothy—Light crop, owing to the dry summer weather.

Clover—Fair crop.

Prairie Hay—Light on account of dry season.

Other Grains and Grasses—About average.

Potatoes—Below the average; yield only fair.

Vegetables—Good.

Apples—Practically none.

Cattle—Not as many as usual; not much development.

Horses—This industry is growing, careful attention being paid to breeding.

Swine—Scarcity of mature hogs and less than the average number of young pigs.

Sheep—Quality good; but not many kept.

Poultry—Thriving industry.

Bees—A neglected industry.

Drainage—Great deal of drainage being done.

Other Industries—Somewhat neglected.

Lands—Value increased, prices ranging from $85 to $140 per acre.

Report of Fair—Held at Fonda, August 2-5 inclusive and it was the best fair we have had in twenty-two years. The exhibits were good and the racing and other attractions were up to date.

POTTAWATTAMIE.

C. H. READ, AVOCA, OCTOBER 25, 1910.

Corn—Good.

Oats—Good.

Wheat—Good.

Rye—Poor.

Barley—Poor.

Flax—None.

Buckwheat—None.

Sorghum—None.

Timothy—Poor.

Clover—Fair.

Prairie Hay—None.

Potatoes—Poor.

Vegetables—Fair.

Apples—Failure.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Fine.

Poultry—Fair.

Bees—Busy.

Drainage—Good.

Other Industries—Average.

Lands—Raising in value.

Report of Fair—Held September 27-30 inclusive.

POWESHIEK.

JAS. NOWAK, MALCOLM, OCTOBER 29, 1910.

General Condition of Crops and Season—Late spring for crops.

Corn—Much corn had to be replanted on account of poor seed but the crop turned out good, averaging about 38½ bushels to the acre.

Oats—Good and heavy, averaging from 30 to 35 bushels to the acre, although some yields of 75 bushels to the acre were reported.

Wheat—Good crop and good quality; yield will average 20 bushels per acre.

Rye—Good crop; not much raised however.

Barley—Good crop; will average about 30 bushels per acre.

Flax—None raised.

Buckwheat—Yield and quality good but very little grown.

Millet—A fairly good crop; hay will go three tons to the acre.

Sorghum—Good quality and yield but not much raised.

Timothy—Only about one-half of a crop on account of dry weather. The average will be about one and one-fourth tons to the acre.

Clover—About one-half the usual crop, yielding about two tons to the acre.

Prairie Hay—None raised.

Other Grains and Grasses—Pastures were dry all summer on account of lack of rain.

Potatoes—About one-half the usual crop, owing to the dry season. The yield averages about 75 bushels per acre.

Vegetables—As a rule garden vegetables suffered on account of lack of rain but still the yield was fairly good.

Apples—Frost killed nearly all the buds in the early spring.

Other Fruits—Very light crop.

Cattle—Cattle feeding was profitable the past year on account of high prices realized in the eastern markets.

Horses—Good horses are in strong demand and find ready sales at high prices, say $150 to $250 per head.

Swine—Hogs have been selling high and bring in good profits. The supply is not up to the demand. No disease reported.

Sheep—Sheep are also selling at good prices.

Poultry—Bringing good prices.

Bees—Bee culture is on the increase and is a profitable industry to those who give it the proper attention.

Drainage—There is much tiling being done on lands that need it and all claim it is a good investment.

Lands—Lands are advancing in price, averaging about $120 per acre. Some sales of extra well improved land close to town are reported as high as $190 per acre.

Report of Fair—Held at Malcom on August 23, 24 and 25. The exhibits were good in all departments except swine. The attendance was cut down somewhat on account of the hot weather, dust, and scarcity of water. The fair paid out about even.

POWESHIEK.

C. P. BUSWELL, GRINNELL, OCTOBER 29, 1910.

General Condition of Crops and Season—Good.

Corn—Good.

Oats—Good, 100 per cent.

Wheat—Good, 100 per cent.

Rye—None raised.

Barley—Good.

Flax—None raised.

Buckwheat—Not any.

Millet—None grown.

Sorghum—One-half crop; quality good.

Clover—One-half crop; good quality.

Prairie Hay—None raised.

Potatoes—One-half crop.

Vegetables—Fair.

Apples—None.

Other Fruits—One-fourth crop of grapes.

Cattle—In fair condition; about 25 per cent short as compared with the number in 1909.

Horses—In good condition; 100 per cent more than in 1909.

Swine—In good condition; about 25 per cent short as compared with the number in 1909.

Sheep—Good; about the usual number.

Poultry—Good; 25 per cent increase.

Bees—Good.

Drainage—More tiling being laid every year.

Other Industries—Good.

Lands—Going higher every month and changing hands quite freely at prices ranging from $150 to $200; in some instances higher.

Report of Fair—Held at Grinnell September 5-8 inclusive. The weather was good and attendance large.

RINGGOLD.

L. F. HALL, TINGLEY, SEPTEMBER 29, 1910.

Corn—Well out of the way of frost; the yield will be above the average for the last ten years.

Oats—Good quality; average yield.

Wheat—Fair yield; not much raised.

Rye—Small acreage; good yield.

Barley—I know of none.

Flax—None.

Buckwheat—Not enough raised to give an estimate.

Millet—Good; small amount raised.

Sorghum—Good; not much raised.

Timothy—Good quality; three-fourths of an average yield.

Clover—Three-fourths of an average yield.

Prairie Hay—None to speak of.

Potatoes—Early ones good quality and fair yield. No late ones raised.

Vegetables—All good except cabbage.

Apples—Practically none.

Other Fruits—Few plums; strawberries good yield; exceptionally large yield of grapes.

Cattle—The average number and in good condition.

Horses—Farmers paying special attention to the breeding of draft horses. There are a nice lot of spring colts.

Swine—Think the number to be marketed is short of the average. Much interest is taken in breeding swine.

Sheep—On the increase.

Poultry—Increasing industry; more poultry than usual raised.

Drainage—More lands being tiled out.

Lands—Farmed better and are advancing in price.

Report of Fair—Held at Tingley September 7-9 inclusive. There were increased exhibits in every department and we think the fair was a success in every way.

RINGGOLD.

F. E. SHELDON, MT. AYR, OCTOBER 25, 1910.

General Condition of Crops and Season—Good.

Corn—Best crop we have had for ten years; condition and quality both good.

Oats—Extra good quality; good yield.

Wheat—Both quality and quantity good.

Rye—None.

Barley—None.

Flax—None.

Buckwheat—Very little raised.

Millet—Good; only a small acreage.

Sorghum—Good.

Timothy—Good quality; crop light on account of dry weather in the early part of the season.

Clover—Never better.

Prairie Hay—None.

Potatoes—Early ones good; late ones only fair.

Vegetables—Good.

Apples—None; all killed by frost.

Other Fruits—None.

Cattle—About average.

Horses—Good.

Swine—Not so many as common but the quality is good.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—None.

Other Industries—None.

Lands—Improving each year and becoming more valuable.

Report of Fair—Held September 26-29 inclusive.

SAC.

S. L. WATT, SAC CITY, SEPTEMBER, 1910.

General Condition of Crops and Season—Good.

Corn—About the average acreage and looking fine. It is late in maturing but prospects look good for a bumper crop.

Wheat—Good; not much raised.

Rye—Good; very little sown.

Barley—Good quality; considerable raised.

Flax—None to speak of.

Buckwheat—Very little grown here.

Millet—Quite a good acreage; good yield; quality of the best.

Sorghum—The best of quality; quite a little raised but not enough to supply the demand.

Timothy—Very light crop but quality very good.

Clover—Extra good; fair weight. Second crop on last year's seeding very good.

Prairie Hay—Quality good but not much in the county.

Other Grains and Grasses—Some alfalfa that looks good. There is also some sweet corn, averaging from 3 to 5 tons per acre.

Potatoes—Not very plentiful; early ones scarce and not many late ones.

Vegetables—Very good and doing fine.

Apples—Not any on account of spring frosts.

Other Fruits—Not much on account of frost in the late spring.

Cattle—Lots of cattle and they are doing fine. The pastures are good but short.

Horses—Doing fine. There are quite a number of colts and prices are high.

Swine—Average number raised and they are doing well.

Sheep—Very good condition.

Poultry—Good many raised; prices good.

Bees—Making lots of honey of number one quality.

Drainage—Lots done this spring, the yards not being able to furnish enough tile.

Other Industries—Sweet corn canning factory doing an immense business.

Lands—Prices good, farms selling as high as $170.00 an acre. Much land is changing hands and farms to rent are scarce.

Report of Fair—Held at Sac City August 9-12 inclusive. There were big crowds; fine attractions and altogether the fair was one of the most successful ones we have had for years. A large balance is looked for.

SCOTT.

SEYMOUR BARR, DAVENPORT, DECEMBER 5, 1910.

General Condition of Crops and Season—Very dry until after the first of August.

Corn—Quality good and average about 50 bushels per acre.

Oats—Quality 98 per cent; yield about 45 to 50 bushels.

Wheat—Extra good; yield from 25 to 33 bushels per acre.

Rye—Fair yield; good quality.

Barley—Good quality; yield about 35 to 40 bushels per acre.

Flax—None.

Buckwheat—Very little sown.

Millet—Good crop; quality first-class.

Sorghum—None.

Timothy—Sixty per cent of a crop; quality extra good.

Clover—Fifty per cent of a crop; 45 per cent quality; bug in clover.

Prairie Hay—Scarcely an average crop; quality and yield fair.

Potatoes—Sixty per cent of a crop; quality good; size small due to lack of rain.

Vegetables—Good crop and quality.

Apples—Failure; freeze in the spring killed them.

Other Fruits—Grapes 20 per cent of a crop; strawberries 60 per cent and raspberries 60 per cent.

Cattle—Cattle are in good shape for winter; prices are high.

Horses—Scarce; quality good; prices high.

Swine—About 75 per cent of the usual number; no disease to speak of.

Sheep—About 80 per cent of a crop; quality and yield good.

Poultry—Eighty per cent of the usual number; quality good; prices high.

Bees—Thirty-five per cent of the usual honey crop. Bees are in good condition for winter.

Drainage—Good; some tiling being done this season.

Lands—Well cultivated and rotated and well manured and fertilized as a rule.

Report of Fair—No fair held.

SHELBY.

FRED FRAZIER, HARLAN, OCTOBER 29, 1910.

General Condition of Crops and Season—Generally favorable.

Corn—Fifteen per cent better, both in quality and in quantity when compared with 1909.

Oats—Crop yield was about an average of 35 bushels per acre and quality was at least 50 per cent better than 1909.

Wheat—About 15 per cent better in yield and 25 per cent better in quality than 1909.

Rye—Very little raised in this county; not enough to speak of.

Barley—Fifteen per cent better in yield and thirty-five per cent better in quality than 1909.

Flax—None.

Buckwheat—Very little raised.

Millet—About an average crop.

Sorghum—Not enough raised to report on.

Timothy—Hay from one-third to one-half a full crop; seed one-half crop; quality good.

Clover—Seed a failure; hay full one-half crop.

Prairie Hay—Limited acreage but what there was yielded one-half crop.

Other Grains and Grasses—None.

Potatoes—Early potatoes one-half crop; others normal.

Vegetables—Fair crop.

Apples—None.

Other Fruits—Very little.

Cattle—Shelby county leads the world in raising pure bred cattle, there being more fine blooded herds within her borders than in any county in the state. The number of young cattle exceeds that of any other year.

Horses—For the last three years our horse industry has been increasing at the rate of about 10 per cent each year, and in price a trifle lower.

Swine—Exceptionally good lot this year; no disease prevalent.

Sheep—Increasing industry in this county, especially in feeding western lambs.

Poultry—Increasing at least 10 per cent in both quality and numbers.

Bees—Not many here but they are producing the best of honey.

Drainage—Is good and being improved with county ditch.

Other Industries—Sweet corn canning factory doing a good business.

Lands—Have increased $25 per acre this year.

Report of Fair—Held at Harlan, August 22-23, 1910, and was a great success.

SIOUX.

N. E. WILLIAMS, SHELDON, SEPTEMBER 22, 1910.

General Condition of Crops and Season—Generally in good condition. Hay and pasture somewhat short on account of dry weather.

Corn—Average crop; slightly increased acreage; 75 per cent out of danger of frost at this time.

Wheat—Extra good quality; averaging over 25 bushels per acre.

Rye—None raised.

Barley—Splendid crop of fine malting grade; running from 35 to 50 bushels per acre.

Flax—Little raised.

Buckwheat—None.

Millet—Good.

Sorghum—Good.

Timothy—Light crop but of good quality. Very little threshed for seed.

Clover—New seeded was good; second crop well filled with seed.

Potatoes—Early potatoes poor on account of drouth; late ones good.

Vegetables—Early ones poor; late ones good.

Apples—None; bloom destroyed by spring freeze.

Cattle—In fine condition; about the usual number in the county; very few on feed as yet.

Horses—Average number; prices steady; large number of spring foals.

Swine—Smaller number of spring pigs; old swine mostly marketed; no disease.

Sheep—Increasing industry; Shropshires and Hampshires are the favorite breeds. Farmers are not satisfied with the price of wool.

Poultry—Increasing in numbers but not enough kept to supply the egg and chicken demand; prices very high.

Bees—Excellent season for bees.

Drainage—Much attention shown in regard to drainage this year. Many thousands of rods of tiling and open ditches have been put in.

Lands—Advanced fully 25 per cent in value the past year, the average price for improved farms being about $135.00.

Report of Fair—Held August 24-25 and 26. Large attendance; fair exhibit of cattle, horses and sheep; very large exhibit of swine. Much interest displayed in all departments, particularly in the machinery and art departments.

SIOUX.

H. SLIKKERVEER, ORANGE CITY, OCTOBER 11, 1910.

General Condition of Crops and Season—Season favorable; crops above the average.

Corn—Very good.

Oats—Good.

Wheat—Above the average.

Rye—None raised.

Barley—Fair.

Flax—None raised.

Buckwheat—None grown.

Millet—Small acreage; good.

Sorghum—None.

Timothy—Fair crop.

Clover—Good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Fair crop.

Vegetables—Very good.

Apples—None.

Other Fruits—None.

Cattle—Doing good; good pasture.

Horses—All right; no disease.

Swine—Good; no disease.

Sheep—Very few sheep in this part of the county.

Poultry—Good; no disease.

Bees—Fair.

Drainage—Very good.

Other Industries—None.

Lands—Land in good demand here, selling from $100 to $150 per acre.

Report of Fair—Held September 14-16 at Orange City. The weather was bad, attendance small and altogether the fair was not very successful. The usual premiums were paid in full.

TAMA.

A. G. SMITH, TOLEDO, OCTOBER 6, 1910.

Corn—Seed and weather were against the average farmer; many pieces of corn were planted three times and then made a poor stand. The quality is much better than in 1909 but the yield less.

Oats—Best we have had in years, both as to quality and yield.

Wheat—Unusually good quality and yield. Spring wheat frequently yielded 30 bushels per acre; winter wheat 25 bushels.

Rye—Very little sown; very good quality; yield above the average.

Barley—Of good quality and yielded well. Harvested in good condition.

Flax—Don't know of any in the county.

Buckwheat—Don't believe there is any raised here.

Millet—Very little sown; usually sown as a second crop on wet land.

Sorghum—A paying crop but it takes too much hand work for the most of the farmers. Seed sells for two cents a pound, or from $15 to $20 per acre for chicken feed.

Timothy—About one-half crop; excellent quality.

Clover—Old seeding was badly winter killed; spring seeding was damaged by drouth. The hay was good but there was very little seed.

Prairie Hay—About one-half crop; not a large acreage.

Potatoes—Early ones were frost bitten and there was not a large yield. Late potatoes made about one-half the average crop.

Vegetables—In general the season was not favorable for vegetables but as elswhere good tillage was rewarded.

Apples—Practically none, buds nipped by early frosts.

Other Fruits—Gooseberries and grapes were fairly good; other fruits were practically a failure.

Cattle—No prevailing disease; the season has been favorable for calves; prices are higher than last year.

Horses—It is reported that influenza among the mares caused a decrease in the number of colts this season; prices remain about as they were last year.

Swine—The past season has been a good one for the raising of pigs; very little cholera; prices high.

Sheep—A gradual increase in the number kept and the quality is increasing; prices are good.

Poultry—The percentage of eggs hatching was below the average, probably due to the changeable weather in April.

Bees—About 90 per cent wintered; not a large amount of honey on account of the drouth.

Drainage—Good.

Other Industries—All doing a good business.

Lands—Sales were good in the spring and high prices prevailed. The drouth caused a decrease in the sales but they are picking up again.

Report of Fair—Tama County fair was held at Toledo on September 27-30, 1910. Hog and sheep exhibits good; creditable showing of horses and cattle; light exhibit of poultry; other departments well filled. The attendance was fair and the gate receipts were about $100 more than last year.

TAYLOR.

R. V. LUCAS, BEDFORD, OCTOBER 26, 1910.

General Condition of Crops and Season—Crops generally fair; growing season a little backward.

Corn—Good.

Oats—Good.

Wheat—Fair.

Rye—Fair.

Barley—Fair.

Flax—Fair.

Buckwheat—Fair.

Millet—Fair.

Timothy—Fair.

Clover—Fair.

Prairie Hay—Fair.

Other Grains and Grasses—Fair.

Potatoes—Poor.

Vegetables—Good.

Apples—Poor.

Other Fruits—Poor to fair.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—Good.

Lands—Good.

Report of Fair—The fair started off with the best of prospects on September 20th. Entries were better than for several years. The 21st was a good day and attendance was large; the 22d was an extra good day. Rain commenced to fall on the afternoon of the 22d and continued until the morning of the 23d. The fair was declared off on account of the rain.

UNION.

E. G. SMELTZER, DECEMBER 27, 1910.

General Condition of Crops and Season—First part of season rather unfavorable on account of cold and drouth, which resulted in a short hay and fruit crop. The middle and last part of the season has been very favorable and the grain crops and pastures are exceptionally good. One of our best and most prosperous years.

Corn—Above the average in quality and quantity. The general average for the county estimated at 39 bushels.

Oats—Average per acre estimated at 22 bushels; quality above the average; weight about 44 pounds per measured bushel.

Wheat—Small acreage; good quality; average 18 to 20 bushels per acre.

Rye—Very small acreage; good quality; above the average yield.

Barley—Small acreage; extra fine quality; yield above the average.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—Small acreage; good quality.

Timothy—Hay crop average; about 1500 lbs. per acre; quality good; good yield of seed and put up in good condition.

Clover—Badly winter killed but partially recovered late in the season and appears all right for next year.

Prairie Hay—Very little in the county; being on low lands and along sloughs.

Potatoes—Quality good; about one-half crop; average yield from 75 to 80 bushels per acre.

Vegetables—Good, both as to quality and yield.

Apples—None.

Other Fruits—None with the exception of a few strawberries and cherries.

Cattle—All cattle are in extra good condition; feeding cattle are scarce.

Horses—All horses are in good condition.

Swine—All in good condition but not the usual number. Heavy hogs very scarce.

Sheep—Decrease in number but the quality is better than ever.

Poultry—More chickens than ever and of the very best of quality. There are a number of breeders of pure bred stock in the county. Turkeys and geese are scarce and high.

Drainage—More farm tiling done this season than in any previous year.

Lands—Farm lands are in better condition than ever. Good roads agitation has resulted in better conditions for traveling and lands are increasing in value rapidly.

Report of Fair—None held.

VAN BUREN.

D. A. MILLER, MILTON, SEPTEMBER 29, 1910.

General Condition of Crops and Season—Far above the average.

Corn—One of the most promising crops we have had for years.

Oats—Same as corn.

Wheat—Yield good; quality excellent.

Rye—Fair crop.

Barley—None.

Flax—None.

Buckwheat—Fair crop.

Millet—Good.

Sorghum—Good.

Timothy—One-half crop.

Clover—Good crop.

Prairie Hay—Good.

Other Grains and Grasses—Excellent.

Potatoes—Fair crop.

Vegetables—Big yield.

Apples—None.

Other Fruits—None.

Cattle—Big per cent on feed.

Horses—Lots of fine horses.

Swine—Scarce and high priced.

Sheep—Good property and quite a number of them.

Poultry—Van Buren is noted for its many poultry yards.

Bees—Fair.

Drainage—Good.

Other Industries—Excellent.

Lands—Advancing in value all the time.

Report of Fair—Held at Milton on September 7, 8, and 9, and was one of the best and most successful fairs ever held.

WARREN.

JOE MCCOY, INDIANOLA, OCTOBER 17, 1910.

General Condition of Crops and Season—The dryest season we have had for several years but our crops are good.

Corn—Fully up to the average.

Oats—Good yield and quality.

Wheat—Both yield and quality good.

Rye—Good yield.

Barley—Not much grown.

Flax—None raised.

Buckwheat—None grown.

Millet—Not much raised.

Sorghum—Not much grown.

Timothy—Short crop; good quality.

Clover—Not a very good yield.

Prairie Hay—None.

Potatoes—Just fair.

Vegetables—About average.

Apples—None.

Other Fruits—None.

Cattle—Not as many as usual.

Horses—About average.

Swine—Scarce.

Sheep—Quite a number being fed.

Poultry—Plentiful.

Bees—Not many.

Drainage—More than usual.

Lands—Some changing hands at steady prices.

Report of Fair—Held at Indianola September 6-9, 1910. Good attendance; good races; exhibits and attractions good. The fair was financially a success.

WAPELLO.

H. R. BAKER, ELDON, SEPTEMBER 21, 1910.

General Condition of Crops and Season—Crops better than average. Forepart of season a little drouthy.

Corn—Large acreage and in good condition. Mostly out of the way of frosts.

Oats—More than the usual acreage. The weather was good for sowing and the yield was good.

Wheat—About the average acreage; yielding from 20 to 35 bushels per acre.

Rye—Very little raised in this locality.

Barley—None sown here.

Flax—None.

Buckwheat—None sown.

Millet—Small acreage; fair crop.

Sorghum—Small acreage; fair crop.

Timothy—Hay a light crop but of fine quality.

Clover—Hay stood the dry spring better than timothy; the quality was good.

Prairie Hay—None.

Potatoes—Usual amount planted but the yield was light.

Vegetables—Late vegetables good.

Apples—None.

Other Fruits—None.

Cattle—Average number in the county and they are in good condition. There is some improvement in breeding.

Horses—Slight increase in number; good horses scarce and commanding high prices. Considerable improvement in breeding.

Swine—Not very plentiful; short crop of spring pigs.

Sheep—Not many raised in this locality but there is some increase in the number and quality.

Poultry—Large numbers are raised and they are in good demand at high prices.

Bees—None.

Drainage—Considerable improvement; more tile being put in every year.

Other Industries—None.

Lands—Increasing in value, ranging in price from $50 to $150 per acre.

Report of Fair—Held at Eldon on September 6-9 inclusive. The best fair we have ever had. Every department was well filled; attendance was good; weather fine, and the racing program exceptionally good.

WINNEBAGO.

J. P. BOYD, BUFFALO CENTER, OCTOBER 25, 1910.

General Condition of Crops and Season—Very good.

Corn—Good.

Oats—Extra good.

Wheat—Extra good; best yield and quality we have had in years.

Rye—None raised to speak of.

Barley—Very little raised.

Flax—Fine; good yield.

Buckwheat—Very little raised.

Millet—Not much sown.

Sorghum—None raised here.

Timothy—Fairly good yield.

Clover—Fairly good yield.

Prairie Hay—Medium yield.

Potatoes—Good acreage; fair yield.

Vegetables—Good.

Apples—Light yield.

Cattle—Average number raised; all in good condition.

Horses—Same as cattle.

Swine—Large number raised; all in fine condition.

Sheep—Not many raised.

Poultry—Large numbers raised and all doing well.

Bees—Not many here.

Drainage—Vast amount of tiling being done.

Lands—Quite a decided advance in price of farm lands this year and indications point to still higher prices.

Report of Fair—Held at Buffalo Center September 15-17, 1910. The weather was fine; attractions good and attendance large.

WINNESHIEK.

L. L. CADWELL, DECORAH, SEPTEMBER 28, 1910.

Corn—Best crop of corn we have had for several years.

Oats—Best in years; yield good; weight heavy.

Wheat—More than the usual acreage; yield above the average; number one quality.

Rye—Very little in the county.

Barley—Increased acreage and the best crop we have had in years.

Flax—Good crop and of the best quality.

Buckwheat—Not much raised but what there is is good.

Millet—Good average crop.

Sorghum—None grown in the county.

Timothy—Light crop on account of drouth.

Clover—Very light crop, due to the drouth.

Prairie Hay—None.

Potatoes—Very poor crop because of the drouth.

Vegetables—Late varieties good.

Apples—No apples; buds killed by April and May frosts.

Other Fruits—All killed by frosts.

Cattle—In very good condition; bringing good prices.

Horses—Prices range 25 per cent higher than one year ago.

Swine—The best showing we have ever had at our county fair. No disease reported and prices are good.

Sheep—Some very large flocks in the county; number increasing.

Poultry—Large flocks of Plymouth Rocks and Rhode Island Reds and small flocks of turkeys over the county. Prices are good.

Bees—Doing very well now; not much honey gathered during the drouth.

Drainage—No drainage to speak of in the county. The natural drainage is good.

Lands—Farm lands range in price from $75 to $125 per acre; not much changing hands as our people are unwilling to sell.

Report of Fair—Held at Decorah on September 13-16 inclusive. The attendance was good and all premiums were paid in full. We have no indebtedness.

WOODBURY.

JOE MORTON, SIOUX CITY, OCTOBER 27, 1910.

General Condition of Crops and Season—General condition of crops is exceptionally good. While the spring was backward the absence of cold winds and excessive rains enabled the farmers to get their crops in in good shape and the late fall gave them a good yield.

Corn—The corn crop in Woodbury county was far better than it has been in years—the quality was excellent and the yield above the average.

Oats—Oat crop the best in this section of the country; quality first-class and yield heavy.

Wheat—Winter wheat slow in starting but the yield and quality the best we have had in years.

Barley—Unusually good crop; excellent yield and the best of quality.

Clover—Crop was good; season being ideal.

Other Grains and Grasses—Pastures good and small grains above the average.

Potatoes—Owing to a late spring the crop was not as good as usual.

Vegetables—First class.

Apples—Owing to late frosts the crop was practically destroyed.

Other Fruits—Late frosts destroyed practically the entire fruit crop.

Cattle—The number of cattle fed in Woodbury county was far above the average. There is a great demand for feeding cattle and good milch cows.

Horses—Big demand for heavy horses; good ones scarce and commanding good prices.

Swine—Are exceptionally good this year and the market is strong. There are a good many raised in this locality and we have had a number of pure bred herds. No cholera reported.

Sheep—Very few sheep are raised in this county, the industry being in its infancy and the interests seem to be increasing.

Poultry—The demand for poultry is increasing, the industry attracting the attention of many progressive farmers.

Bees—More honey produced this year than ever before. There are a number of first-class apiarys in the county.

Drainage—There has been a great deal of tiling put in this year, the cement predominating. The benefit realized from the tiling is appreciated by those farmers whose land is not rolling and low.

Other Industries—Correspondingly prosperous.

Lands—Land values considerably on the increase; comparatively little land being offered for sale.

Report of Fair—Held September 19-24 inclusive. The Fair opened under the most auspicious circumstances but on Thursday a heavy rain set in and continued throughout the balance of the week. The Stock Show was better than ever before, exhibits in all departments were of very high quality and the educational features were the best. From an amusement standpoint, the free attractions and racing program were above the average.

WOODBURY.

JAS. HOBBS, MOVILLE, 1910.

Corn—110 per cent as compared with the crop of 1909.

Oats—120 per cent as compared with the crop of 1909.

Wheat—115 per cent as compared with crop of 1909.

Barley—110 per cent as compared with crop of 1909.

Timothy—50 per cent as compared with crop of 1909.

Clover—75 per cent as compared with 1909 crop.

Prairie Hay—100 per cent as compared with 1909 crop.

Alfalfa—90 per cent as compared with crop of 1909.

Potatoes—65 per cent as compared with 1909 crop.

Vegetables—75 per cent as compared with crop of 1909.

Apples—None.

Other Fruits—None.

Cattle—100 per cent as compared with 1909.

Horses—100 per cent as compared with 1909.

Swine—85 per cent as compared with 1909.

Sheep—100 per cent as compared with 1909.

Poultry—100 per cent as compared with 1909.

Bees—75 per cent as compared with 1909.

Drainage—100 per cent as compared with 1909.

Other Industries—110 per cent as compared with 1909.

Lands—150 per cent as compared with 1909.

Report of Fair—Held at Moville September 7-9, 1910. About 150 per cent as compared with 1909 fair.

WORTH.

E. H. MILLER, NORTHWOOD, SEPTEMBER 26, 1910.

General Condition of Crops and Season—Good.

Corn—Large acreage planted and the indications are that there will be a good crop except on high sandy land.

Oats—Good quality; not a large yield on account of the drouth, from 20 to 40 bushels per acre.

Wheat—Finest crop in thirty years; yield being from 18 to 30 bushels per acre.

Rye—Very little grown but the yield and quality were good.

Barley—Good crop; color fine; berry plump and of good weight.

Flax—Early flax fairly good but the late was injured badly by drouth.

Buckwheat—Very little sown and that was very poor on account of the dry weather.

Millet—Very little sown and what there is is very backward on account of the drouth.

Sorghum—Not much grown but what there is looks fairly good.

Timothy—Short crop but it was harvested in fine shape.

Clover—Short crop but was put up in excellent condition.

Prairie Hay—Very little raised.

Other Grains and Grasses—Slough hay, or that on wet land, was fairly good.

Potatoes—Very short crop; not enough raised for home use.

Vegetables—Suffered badly from drouth.

Apples—The crop was entirely ruined by late frosts.

Other Fruits—Entirely a failure owing to the frosts.

Cattle—In fair condition; pastures short on account of drouth. About the usual number raised.

Horses—In fair condition; quality much better than heretofore on account of improved methods of breeding.

Swine—About the usual number raised and of improved quality.

Sheep—Very few raised.

Poultry—The poultry industry seems to be gaining ground and some fine specimens of improved varieties were seen at our fair.

Bees—Made a very small amount of honey owing to the drouth.

Drainage—A large amount of drainage has been done the past three or four years. Twelve large drainage districts have been established in the county.

Lands—Changing hands rapidly and values are raising slowly. Good lands sell from $65 to $100 per acre.

Report of Fair—Held at Northwood September 21-23, inclusive. Owing to bad weather our attendance was not as large as we desired but we had a good showing in nearly all departments.

WRIGHT.

CHAS. ROTZLER, CLARION, SEPTEMBER 22, 1910.

General Condition of Crops and Season—Good.

Corn—Good; better than average.

Oats—Good; better than average.

Wheat—Fair.

Barley—Fair.

Timothy—Fair.

Clover—Good.

Potatoes—Fair.

Vegetables—Good.

Apples—None.

Other Fruits—None.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—An immense lot of drainage being done.

Lands—Good.

Report of Fair—Fair held September 6-9 inclusive at Clarion. Good weather; fair attendance; good display in all departments and on the whole the fair was a success.

PART XIV

Horse Breeding Industry in Iowa

List of State Certificates Issued from May 1, 1910, to May 1, 1911

Copy of Laws Governing State Enrollment of Stallions

We present herewith a list of stallion owners and names of stallions, by counties, for which state certificates have been issued from May 1, 1910, to May 1, 1911.

There was issued prior to May 1, 1910, 6,349 certificates and 1,091 transfers. From May 1, 1910, to May 1, 1911, there was issued 876 certificates and 388 transfers; making a total of 7,224 certificates and 1,478 transfers issued to May 1, 1911.

Inasmuch as the law under which we are now registering stallions does not require an annual renewal, it is impossible for us to present a report showing the actual number of stallions owned or offered for service in the state. However, we wish to thank the Thirty-fourth General Assembly for enacting a very satisfartory stallion law which will correct that fault, and it embodies a number of important changes for which this department has been contending for a number of years.

The principal features of the new law, which will go into effect January 1, 1912, are as follows:

Requiring annual renewal of certificates of soundness between January 1 and April 1 of each year.

Disqualifying for public service a stallion affected with specified hereditary or contagious diseases.

Requiring an affidavit from owner or from a graduate veterinarian regarding the soundness of a stallion offered for sale or public service.

Requiring the owner of a grade stallion to take out a certificate of soundness and to publish the substance of said certificate along with all advertising matter.

Requiring a certificate from state or federal veterinarian that animal is free from specified hereditary or contagious diseases before said animal can be imported into the state.

The following is a copy of the law regulating the sale, transfer and use for public service stallions and jacks. Following this is a table showing the number of certificates and transfers issued in each county, by breeds. This is followed by a directory of owners of pure bred stallions, by counties, to whom certificates were issued during the period from May 1, 1910, to May 1, 1911.

Laws of Iowa Governing State Enrollment of Stallions Kept for Public Service, Sale, Exchange or Transfer, and Lien for Service Fee

AN ACT regulating the keeping, offering for public service and sale of stallions, jacks, and registered pedigreed stock, to define the terms and conditions under which same may be kept, offered for public service and sale, and providing penalties for the violation thereof. Also repealing sections twenty-three hundred forty-one-a (2341-a), twenty-three hundred forty-one-b (2341-b), twenty-three hundred forty-one-c (2341-c), twenty-three hundred forty-one-d (2341-d), and twenty-three hundred forty-one-e (2341-e), supplement to the code 1907.

Be it enacted by the General Assembly of the State of Iowa:

Section 1. No person, firm, company or corporation shall offer for public service, sale, exchange or transfer in this state as registered any stallion or jack over two years old unless and until he shall have caused the name, age, color and pedigree of the animal to be enrolled by the secretary of the state board of agriculture and shall have procured from him a certificate of such enrollment. The secretary of the state board of agriculture shall recognize as registered only such animals as have been recorded in some stud book recognized by the department of agriculture of the state of Iowa, and the certificate of pedigree shall accompany the application for enrollment. The state of Iowa shall be paid the sum of one dollar for each annual certificate of soundness issued by the secretary of the state board of agriculture according to the methods hereinater provided.

Section 2. The owner or keeper of each and every stallion or jack over two years old kept for public service or for sale, exchange or transfer shall make oath before an officer duly authorized to administer an oath that the stallion or jack is to the best of his knowledge free from hereditary, contagious or transmissible disease, or in lieu thereof a cereificate signed by a duly qualified veterinarian who shall be a regular graduate of a recognized veterinarian college, certifying that such animal is free from hereditary, contagious or transmissible disease, and shall file the same with the secretary of the state board of agriculture. Any veterinarian who knowingly or wilfully makes a false report upon the disease or freedom from disease, or soundness or unsoundness of the animal brought to him for examination shall be punished by the revocation of his veterinarian certificate. The owner and keeper of each and every stallion or jack over two years old kept for public service or for sale, exchange or transfer shall between the dates of January first (1) and April first (1) of each year after their first registration make application for the renewal of the certificate in the form and manner as above described.

Section 3. The presence of any one of the following named diseases shall disqualify a stallion or jack for public service and no certificate shall be issued by the secretary of the state board of agriculture: Glanders, farcy, maladie du coit, coital exanthema, urethral gleet, mange, melanosis, blindness, cataract, bone spavin, bog spavin, periodic opthalmia, (moon blindness).

Stallions or jacks possessing any of the following named unsoundnesses may receive a certificate but each certificate and every advertisement shall state in large type or writing that the stallion or jack is unsound and shall specify the unsoundness or unsoundnesses which said stallion or jack has: Amaurosis, larynegeal hemiplegia (roaring or whistling), pulmonary emphysema (heaves, broken wind), ringbone, side bone, navicular disease, curb, with curby formation of hock, chorea (St. Vitus' dance, crampiness, shivering, string halt).

In cases where stallions or jacks possess any of the above named unsoundnesses in a very aggravated or serious form, the department of agriculture may upon investigation disqualify such stallion or jack from public service, if they consider him so unsound as to be unfit for breeding purposes.

Section 4. Any owner or keeper of a registered stallion or jack over two years old offered for public service or for sale, exchange or transfer who represents or holds such animal as registered shall keep a copy of the state registration and certificate of unsoundness upon the door or stall of the stable where such animal is usually kept, and where such animals are advertised each and every advertisement shall contain a copy of such certificate or the substance thereof. Where certificates of registration have heretofore been issued by the state board of agriculture an additional certificate of registration shall not be required, but application for certificate of soundness shall be made as hereinbefore provided. Any owner or keeper of a stallion or jack over two years old other than registered offered for public service or for sale, exchange or transfer must secure certificates of soundness from the secretary of the state board of agriculture and advertise said stallion or jack by having and posting hand bills or posters not less than five by seven inches in size, and said bills or posters must have printed thereon, immediately preceding or above the name of the stallion the words "grade stallion" (or jack) in type not smaller than one inch in height, said bills or posters to be posted in a conspicuous manner at all places where the said stallion or jack is kept for public service, sale, exchange or transfer, together with a copy of the certificate of soundness issued by the secretary of the state board of agriculture, and where such animals are advertised each and every advertisement shall contain a copy of the said certificate or the substance thereof and the words "grade stallion" (or jack).

Section 5. When complaint is made to the state board of agriculture that a stallion or jack is diseased and on investigation it is by the department deemed necessary, an examination shall be made by the state veterinarian or his duly authorized deputy; the owner of such stallion or jack shall select some recognized graduate veterinarian to act with the state veterinarian and the said veterinarian shall, upon receipt of a notice act jointly with the state veterinarian and these two shall appoint a third graduate veterinarian to act with them and their decision shall be final. In case all three or any two of the experts declare the stallion or jack is eligible to receive or retain a license, then the expense of the consultation shall be paid by the state board of agriculture out of funds collected for registration fees, or if three or any two of the experts declare the stallion or jack not to be eligible in accordance with the provisions of this act, the expense incurred shall be paid by the person owning the animal and it may be collected in the same manner as in any case of appeal in civil action.

Section 6. If the owner of any registered animal shall sell, exchange or transfer the same, he shall file certificate, accompanying the same with a fee of fifty cents, with the secretary of the state board of agriculture, who shall, upon receipt of the original state certificate properly transferred and the required fee, issue a new certificate to the then new owner of the animal and all fees provided by this act shall go into the treasury of the department of agriculture.

Section 7. Every person, firm, company or corporation importing any stallion or jack into the state of Iowa for use or public service, sale, exchange or transfer, shall first secure certificate of freedom from disease from a recognized state or federal veterinarian, certifying that said animal is free from any or all diseases referred to in Section Three of this act. The federal admission certificate shall be accepted for horses imported from foreign countries.

Section 8. Any person who shall fradulently represent any animal, horse, cattle, sheep or swine to be registered, or any person who shall post or publish or cause to be posted or published any false pedigree or certificate of soundness, or shall use any stallion or jack over two years old for public service, or sell, exchange or transfer any stallion or jack over two years old, representing such animal to be registered, without first having such animal registered, and obtaining the certificate of soundness from the state board of agriculture, as hereinbefore provided, or who shall violate any of the provisions of this act, shall be guilty of a misdemeanor and be punished by a fine of not more than one hundred dollars, or imprisoned in the county jail not exceeding thirty days or by both fine and imprisonment.

Section 9. This act shall take effect and be in force from and after the first day of January, 1912, and sections twenty-three hundred forty-one-a (2341-a), twenty-three hundred forty-one-b (2341-b), twenty-three hundred forty-one-c (2341-c), twenty-three hundred forty-one-d (2341-d), and twenty-three hundred forty-one-e (2341-e) of the supplement to the code, 1907, are hereby repealed on and after the first day of January, 1912. Nothing in this act shall be construed so as to affect litigation arising prior to the first day of January, 1912.

LIEN LAW FOR SERVICE FEE.

H. F. 126.

AN ACT providing that owners or keepers of stallions shall have a lien upon the progeny of any such animal for the service fee therefor.

Be it enacted by the General Assembly of the State of Iowa:

Section 1. The owner or keeper of a stallion kept for public services who has complied with sections twenty-three hundred and forty-one-a (2341-a), twenty-three hundred and forty-one-b (2341-b), twenty-three hundred and forty-one-c (2341-c), and twenty-three hundred and forty-one-d (2341-d), of the supplement to the code, 1907 shall have a prior lien upon the progeny of such stallion to secure the amount due such owner or keeper for the service of such stallion, resulting in said progeny, provided, that where such owner or keeper misrepresents such stallion by false pedigree no lien shall be obtained.

Sec. 2. The lien herein provided for shall remain in force for a period of six months from the birth of said progeny and shall not be enforced thereafter.

Sec. 3. The owner or keeper of such stallion may enforce the lien herein provided by placing in the hands of any constable an affidavit containing a description of the stallion and a description of the dam and the time and terms of service, and said constable shall thereupon take possession of said progeny and sell the same for non-payment of service fee by giving the owner of said progeny ten (10) days' written notice, which notice shall contain a copy of the affidavit and a full description of the progeny to be sold, the time and hour when, and the place at which the sale will take place, and posting for the same length of time in three public places in the township of such owner's residence a copy of such notice. If payment of the service fees and costs are not made before the date thus fixed, the constable may sell at public auction to the highest bidder such progeny and the owner or keeper of the stallion may be a bidder at such sale. The constable shall apply the proceeds, first, in the payment of the costs, second, in the payment of the service fee. Any surplus arising from sale shall be returned to the owner of the progeny.

Sec. 4. The right of the owner or keeper to foreclose, as well as the amount claimed to be due, may be contested by any one interested in so doing, and the proceedings may be transferred to the district court, for which purpose an injunction may issue, if necessary.

Approved April 8, A. D. 1909.

Registry Associations Recognized as Standard

American Trotter	American Trotting Register	American Trotting Register Association, W. H. Knight, Sec'y 137 South Ashland Ave., Chicago, Ill.
Arabian	Studbook of the Arabian Horse Club of America	Arabian Horse Club of America, H. K. Bush-Brown, Sec'y, Newburgh, N. Y.
Belgian Draft	American Register of Belgian Draft Horses	American Association of Importers and Breeders of Belgian Draft Horses, J. D. Conner, Jr., Sec'y, Wabash, Ind.
Cleveland Bay	American Cleveland Bay Stud Book	Cleveland Bay Society of America, R. P. Stericker, Sec'y, Oconomowoc, Wis.
Clydesdale	American Clydesdale Stud Book	American Clydesdale Association, R. B. Ogilvie, Sec'y, U. S. Yards, Chicago, Ill.
French Coach	French Coach Stud Book	French Coach Horse Society of America, Duncan E. Willett, Sec'y, Maple Ave. & Harrison St., Oak Park, Ill.
French Draft	National Register of French Draft Horses	National French Draft Horse Association of America, C. E. Stubbs, Sec'y, Fairfield, Iowa.
German Coach, Oldenburg	German, Hanoverian & Oldenburg Coach Horse Stud Book	German, Hanoverian & Oldenburg Coach Horse Association of America, J. Crouch, Sec'y, LaFayette, Ind.
Hackney	American Hackney Stud Book	American Hackney Horse Society, Gurney C. Gue, Sec'y, 460 Fulton Ave., Hempstead, L. I., N. Y.
Jacks and Jennets	American Jack Stud Book	American Breeders' Association of Jacks and Jennets, J. W. Jones, Sec'y, Columbia, Tenn.
Morgan	American Morgan Register	American Morgan Register Association, T. E. Boyce, Sec'y, Middlebury, Vt.
Percheron	Percheron Stud Book of America	Percheron Society of America, Wayne Dinsmore, Sec'y, U. S. Yards, Chicago, Ill.
Saddle Horse	American Saddle Horse Register	American Saddle Horse Breeders' Association, I. B. Nall, Sec'y, Louisville, Ky.
Shetland Pony	American Shetland Pony Club Stud Book	American Shetland Pony Club, Miss Julia M. Wade, Sec'y, LaFayette, Ind.
Shire	American Shire Horse Stud Book	American Shire Horse Association, Chas. Burgess, Sec'y, Wenona, Ill.
Suffolk	American Suffolk Horse Stud Book	American Suffolk Horse Association, Alex Galbraith, Sec'y, DeKalb, Ill.
Thoroughbred	American Stud Book	The Jockey Club, W. H. Rowe, Registrar, 571 Fifth Ave., New York, N. Y.
Welsh Pony and Cob	Welsh Pony and Cob Stud Book	The Welsh Pony & Cob Society of America, John Alexander, Sec'y, Aurora, Ill.

NUMBER AND CHARACTER OF CERTIFICATES ISSUED

May 1, 1910, to May 1, 1911.

County	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenburg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Adair	1	2		2							2			6			13
Adams		1		2							6			1			10
Allamakee		5				1					5			1			12
Appanoose	2					2					2			1			7
Audubon	1	2		3		1					1			1			9
Benton	1	2									7			1			11
Black Hawk	1	5							1		17			7			31
Boone		14									1			1			16
Bremer				1		1					3						5
Buchanan	2	5					1				5		1				14
Buena Vista		1		1							5						7
Butler	2	2		1		1					3						9
Calhoun	2			1		1					8						12
Carroll	3	1		2							8			2			16
Cass	1			4							7			1			13
Cedar	2	1									7						10
Cerro Gordo	1	2									6						9
Cherokee	1	2		1		1											5
Chichasaw	3	4							1		6						14
Clarke											5			2			7
Clay	1			1							4			1			7
Clayton	2	4			1						7			2			16
Clinton	2					2			1		2			1			8
Crawford	1					2					7			1			11
Dallas	1	4				4	1				5			1			16
Davis	2			3		1					2						8
Decatur	1					1					3						5
Delaware	1	57		1	4	1	8	7			76			11			166
Des Moines	1	1									1						3
Dickinson		2					1				3			1			7
Dubuque		2															2
Emmet											5			2			7
Fayette		4		1		1		2			11						19
Floyd		1				1					5						7
Franklin											3						3
Fremont							1				1			1			3
Greene						1					7			3			11
Grundy						1					7			1			9
Guthrie	1	3		1							8			2			15
Hamilton	1	4			1	3	1				4						14
Hancock	1	1		1		2					2						7
Hardin	3	2									6						11
Harrison	1					1					4			1			7
Henry	5			1		1					8			2			17
Howard		1		1							4						6
Humboldt	1	5									2			1			9
Ida				2		1					4			1			8
Iowa	5			5		1					2						13
Jackson	1	4												1			6
Jasper		2		1		1					9			2			15
Jefferson	1	1				4					16						22
Johnson	4	2		1							4						11
Jones	1	1		2							5						9
Keokuk		1				3	1				6			1			12
Kossuth		6		1		2					12			1			22
Lee	1										2						3
Linn	3	4		2		2					9						20
Louisa	2	2				2					4			2			12
Lucas				2							6						8
Lyon		3				2					6						11
Madison		2				1					7			4			14
Mahaska	1					2	1				7						11
Marion	4	2		1							6			3			16

NUMBER AND CHARACTER OF CERTIFICATES—CONTINUED

County	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenburg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Marshall	1	1	----	1	----	1	----	----	----	----	4	----	----	----	----	----	8
Mills	1	----	----	----	----	----	----	----	----	----	1	----	----	1	----	----	3
Mitchell	2	----	----	1	----	----	----	----	----	----	3	----	----	1	----	----	7
Monona	1	1	----	----	----	----	----	----	----	----	4	----	----	----	----	----	6
Monroe	----	----	----	1	----	----	----	----	----	----	1	----	----	----	----	----	2
Montgomery	1	----	----	----	----	2	----	----	----	----	4	----	----	2	----	----	9
Muscatine	1	----	----	----	----	1	----	----	----	----	5	----	2	----	----	----	9
O'Brien	2	----	----	----	----	2	----	----	----	----	3	----	----	----	----	----	7
Osceola	----	----	----	----	----	----	----	----	----	----	1	----	----	1	----	----	2
Page	1	----	----	----	----	1	----	----	----	----	2	----	----	----	----	----	4
Palo Alto	----	1	----	----	----	1	----	----	----	----	5	----	----	----	----	----	7
Plymouth	1	----	----	----	----	----	2	----	----	----	1	----	----	----	----	----	4
Pocahontas	2	3	----	----	----	1	----	----	----	----	4	----	----	1	----	----	11
Polk	2	3	----	----	----	----	----	----	----	----	7	----	----	4	----	----	16
Pottawattamie	----	1	----	----	----	1	1	----	----	----	5	----	----	----	----	----	8
Poweshiek	2	3	----	1	----	1	----	----	4	----	6	----	----	4	----	1	22
Ringgold	1	----	----	----	----	2	----	----	----	----	5	----	----	1	----	----	9
Sac	----	1	----	----	----	----	----	----	----	----	1	----	----	----	----	----	2
Scott	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	1
Shelby	1	2	----	1	----	1	----	----	----	----	9	----	----	2	----	----	16
Sioux	----	1	----	1	----	----	1	----	----	----	5	----	----	----	----	----	8
Story	1	3	----	----	----	2	----	1	----	----	3	----	----	----	----	----	10
Tama	2	3	----	1	----	----	1	----	----	----	11	----	----	----	----	----	18
Taylor	----	2	----	----	----	----	----	----	1	----	9	----	----	3	----	----	15
Union	2	5	----	----	----	3	1	----	----	----	17	----	----	7	----	----	35
Van Buren	----	----	----	----	----	----	----	----	----	----	5	1	----	----	----	----	6
Wapello	2	----	----	3	----	1	----	----	----	----	5	----	----	1	----	----	12
Warren	11	1	----	----	----	2	----	----	----	----	6	----	----	----	----	----	20
Washington	3	----	----	----	----	----	----	----	----	----	7	----	----	5	----	----	15
Wayne	1	----	----	----	----	1	----	----	----	----	2	----	----	2	----	----	6
Webster	3	2	----	----	----	1	----	----	----	----	----	----	----	----	----	----	6
Winnebago	----	----	----	----	----	----	----	----	----	----	2	----	----	----	----	----	2
Winneshiek	2	2	----	3	----	2	----	----	----	----	3	----	----	----	----	----	12
Woodbury	----	----	----	1	----	----	----	----	----	----	7	----	----	----	----	----	8
Worth	1	----	----	----	----	----	----	----	----	----	3	----	----	----	----	----	4
Wright	1	----	----	----	----	2	----	----	----	----	4	----	----	----	----	----	7
Horses owned in neighboring states	----	----	----	----	----	----	----	----	----	----	3	----	----	----	----	----	3
Total	119	205	----	59	6	79	21	10	8	----	560	1	3	105	----	1	1177

DIRECTORY OF OWNERS OF PURE BRED STALLIONS BY COUNTIES

Certificates Issued From May 1, 1910 to May 1, 1911

ADAIR COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6424	Newt. Foster	Orient	Creston Joe 4658	Belgian
6489	H. A. Alcorn	Adair	Histro F. 35686	Trotter
2220	James Holliday	Greenfield	Toneham Stroxton 8533 (23804)	Shire
67	F. M. Ickis	Greenfield	Brampton Harold 6237	Shire
6797	Faber, Hyda & Co	Fontanelle	Truman's Wonder 10866	Shire
3986	Fontanelle Shire Horse Co	Fontanelle	Nailstone Desert Chief 8829 (24470)	Shire
1718	Strong Bros	Orient	Botha 7003 (19390)	Shire
1278	A. T. Mason	Orient	Vibrant 40702 (48891)	Percheron
6950	H. A. Alcorn	Adair	Montrouge 68952	Percheron
4330	J. A. Wilson & Son	Hebron	Prince of Balloch Roy 13028	Clydesdale
7008	John McDermott	Bridgewater	Boule d' Or 5682 (Vol. 17)	Belgian
7043	Earl Bloom	Bridgewater	Ansly Victor Chief 11375 (26980)	Shire
7199	W. F. Witham	Orient	Lord Lockwood 15975	Clydesdale

ADAMS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6434	Geo. W. Wasson	Nodaway	Don 35362	Percheron
562	W. L. Morris	Corning	Mustapha (53274)	Percheron
6825	E. L. Humbert	Corning	Teddy R. 59124	Percheron
6826	E. L. Humbert	Corning	Brilliant T. 59151	Percheron
6827	E. L. Humbert	Corning	Louviers 60652	Percheron
6894	H. C. Reese	Prescott	Porteur II 54510	Percheron
2651	L. E. Weaver	Nodaway	Plumeau d' Acosse 2041 (31098)	Belgian
4432	Leonard Bros.	Corning	King Chattan 13406	Clydesdale
6023	R. E. Moore	Carbon	Kidsnape 10959 (26934)	Shire
7196	G. W. Gissible	Nevinville	Phil 15970	Clydesdale

ALLAMAKEE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6432	Austin Ewing	Postville	LaRambant 55570	Percheron
6474	D. F. Snitker	Waukon	Glaneur 4243 (43350)	Belgian
6661	J. H. Waters	Postville	Express 1312 (19110)	Belgian
6748	Fred Kuhse	Postville	Harold's Comet 12035	Shire
6795	Wm. Gericke	Postville	Armor 46682	Percheron
3039	Henry Lenz	Lansing	Admiral de Tilly (26770)	Belgian
6922	Smitker Bros	Postville	Cronje de Thor 4811 (42736)	Belgian
6924	Gust Olson	Postville	Martin 4146 (51512)	Belgian
2825	Henry Grotegut	Waukon	Loubet 48225	Percheron
6307	Henry Grotegut	Waukon	Reuil Wayne 17928	French Draft
4527	John A. Schroeder	Postville	Isard 41862	Percheron
7160	H. G. Hagen	Waukon	Sergent 31320 (46908)	Percheron

APPANOOSE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6363	J. B. Packard	Numa	Jabot 64376 (67913)	Percheron
6368	C. C. & P. M. Phillips	Centerville	Paris 61285	Percheron
6508	Dr. Wm. M. Scott	Centerville	Lockheart Jr. 48098	Trotter
6560	W. D. Freeborn	Dean	Billie Sunday 19470	French Draft
5039	R. H. Curl	Cincinnati	Hasty Boy 49793	Trotter
4913	Otis Scott	Plano	Fauveau 14562	French Draft
7211	J. F. Stanton	Numa	Glellman Jr. 12386	Shire

AUDUBON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1528	E. D. Powell & A. W. Harvey	Exira	Iowa Lee 40181	Trotter
6565	Wilson Parrott	Brayton	Max Welton 13921	Clydesdale
6772	Jans P. Kjergaard	Exira	Just Inn 3895	Belgian
6829	Enar Rasmussen	Brayton	Chief 14655	Clydesdale
5348	Wm. Layland	Audubon	Gaston de Bossierre 3250 (43696)	Belgian
6970	Tom Hardensen	Exira	Bon Rasselas Jr. 9541	Shire
353	Peter Sulvestersen	Brayton	Monfino 28464 (44967)	Percheron
7018	Jacob Layland	Audubon	Reese 11767	French Draft
7030	J. C. Hardman	Brayton	Baron 14654	Clydesdale

BENTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6352	T. H. Weil	Blairstown	Hausey 63544 (74274)	Percheron
6433	M. D. Dodd	Belle Plaine	Pat Aegon 49394	Trotter
5028	Harwood Bros.	Garrison	Charmant 42065 (58403)	Percheron
6687	David Newton	Blairstown	Izathis 69137 (79965)	Percheron
1172	H. J. Stein & H. F. Kunstorf	Newhall	Beach Insurgent 6544 (Vol. 24)	Shire
1497	Haerther & Schminke	Atkins	Hardi (22648)	Belgian
4990	Oscar Anderson	Vinton	Lapin 20606 (42840)	Percheron
7015	T. H. Weil	Blairstown	Ferron 75128 (53746)	Percheron
7017	D. F. Newton	Blairstown	Francisco 41346 (64069)	Percheron
7016	D. F. Newton	Blairstown	Inquiet 69132 (79571)	Percheron
7081	Richard Pickart	Norway	Brilliant de Trop 5443 (49552)	Belgian

BLACK HAWK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6471	Joe McLaughlin	LaPorte City	Charley Todd 47812	Trotter
6532	Wm. Crownover	Hudson	Banknote 4922 (Vol. 16)	Belgian
6533	Wm. Crownover	Hudson	Faro de Tripsee 4923 (58598)	Belgian
6534	Wm. Crownover	Hudson	Marius de Lievin 4925 (Vol. 17)	Belgian
6535	Wm. Crownover	Hudson	Laureat 4924 (Vol. 16)	Belgian
6537	Wm. Crownover	Hudson	Schuyler 11391	Shire
6538	Wm. Crownover	Hudson	Flynn 11390	Shire
6539	Wm. Crownover	Hudson	Major Martz 11389	Shire
6540	Wm. Crownover	Hudson	Raggatira III 11573 (27695)	Shire
6541	Wm. Crownover	Hudson	Ragdale Forest Chief 11572 (27688)	Shire
6542	Wm. Crownover	Hudson	Indecent 69205 (78742)	Percheron
6543	Wm. Crownover	Hudson	Indu 69201 (81975)	Percheron
6544	Wm. Crownover	Hudson	Inepte 69200 (80927)	Percheron
6545	Wm. Crownover	Hudson	Incinatus 69203 (79840)	Percheron
6546	Wm. Crownover	Hudson	Ituree 69202 (80777)	Percheron
6548	Wm. Crownover	Hudson	Izola 69198 (79972)	Percheron
6549	Wm. Crownover	Hudson	Issacher 69199 (82131)	Percheron

BLACK HAWK COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6550	Wm. Crownover	Hudson	Bobbie 56603	Percheron
6553	Wm. Crownover	Hudson	Cosby Echo 10626 (26082)	Shire
5212	Chas. Northrup	Dunkerton	Journaliste 55462 (67192)	Percheron
6562	G. H. Blum	Cedar Falls	Pierre 55078	Percheron
774	Albert Delaney	Washburn	Tommy Brown 5128	Morgan
274	Wm. Crownover	Hudson	Sampson 31414	Percheron
6744	Wm. Crownover	Hudson	Gringalet 61588 (71826)	Percheron
6750	Joseph Kerr & Sons	Waterloo	Fondateur 53356 (65310)	Percheron
6791	Wm. Crownover	Hudson	Blocky Prince II 68288	Percheron
5726	Wm. Pieman	Cedar Falls	Southhill Precentor 10625 (26900)	Shire
116	Wm. Crownover	Hudson	Timonnier 30406 (52771)	Percheron
6964	M. J. Magee	Dunkerton	Palias 5529 (58988)	Belgian
7142	James Loonan & Son	Waterloo	Mantor 67575	Percheron
5793	G. M. Hall	Cedar Falls	Sir Guibert 64073	Percheron

BOONE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3938	L. Savits et al	Ogden	Clayton 8862	Shire
6751	A. M. VanSteenberge	Ogden	Sultan 5216	Belgian
6752	A. M. VanSteenberge	Ogden	Clarion de Claquebois 2585 (Vol. 13)	Belgian
6753	A. M. VanSteenberge	Ogden	Defi 5323 (55904)	Belgian
6754	A. M. VanSteenberge	Ogden	Narcisse 5327 (52246)	Belgian
6755	A. M. VanSteenberge	Ogden	Octave du Fosteau 5329 (55072)	Belgian
6756	A. M. VanSteenberge	Ogden	Astrakan 5320 (56016)	Belgian
6757	A. M. VanSteenberge	Ogden	Major de Thollen 5326 (54116)	Belgian
6758	A. M. VanSteenberge	Ogden	Juan 5325 (55202)	Belgian
6759	A. M. VanSteenberge	Ogden	Tom de Mol 5331 (56378)	Belgian
6763	A. M. VanSteenberge	Ogden	Nectar 5328 (58254)	Belgian
6764	A. M. VanSteenberge	Ogden	Campagnard de Baulers 5322 (56198)	Belgian
6940	Chas. V. Johnson	Pilot Mound	Oklahoma Boy 4659	Belgian
6957	John Zunkel	Pilot Mound	Involucre 70853 (78839)	Percheron
2392	James Patten	Luther	Paulin II (15960)	Belgian
3716	J. M. Brown	Jordon	Mouton de Bierset 2908 (Vol. 14)	Belgian

BREMER COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5590	J. W. Tegtmeier	Sumner	Houilleur 52686 (74222)	Percheron
7022	E. M. Reeves	Waverly	Jubiter 70092	Percheron
7038	Bert Buhr	Readlyn	Prince Pleasant 13887	Clydesdale
2139	W. H. Cook	Waverly	Charleagno 25888	Percheron
7143	Chas. Scheifebein	Sumner	Hannibal 20625	French Draft

BUCHANAN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6357	Henry J. Werling	Jesup	Stever 50924	Percheron
6454	Frank Rehberg	Littleton	Flying Baron 34695	Trotter
6555	M. A. Smith	Independence	Baron Rigby 49842	Trotter
6713	R. J. Stevenson	Fairbank	Cognac de Rum 5171 (45074)	Belgian
6806	Fairbank Belgian Horse Co.	Fairbank	Joli de Kerke 5117 (58294)	Belgian
6865	Joseph Mastellsr	Jesup	Harem 72238 (77914)	Percheron
6869	R. J. Stedenson	Fairbank	Robin S. 10515	Shetland
880	Collins & Rosensteil	Winthrop	Rameur 22900 (41803)	Percheron
6981	Jesup & Shady Grove Horse Co.	Jesup	Buffalo 5170 (Vol. 17)	Belgian
6980	Fox Center Twp. Imp. Belgian Horse Co.	Jesup	Beaulard de Villers 5163 (54144)	Belgian
7040	R. J. Stevenson	Fairbank	Souvestre 53654	Percheron
7059	Frank Rehberg	Fairbank	Arriva de Soignies 5594 (Vol. 18)	Belgian
7063	I. D. Wills	Jesup	Poseiden 1525	German Coach
4267	Daniel Gallop	Fairbank	Willis 54405	Percheron

BUENA VISTA COUNTY.

6447	John Connell	Storm Lake	Ignare 68566 (81878)	Percheron
4351	W. F. Miller & W. J. Pettit	Storm Lake	Imperial 54553 (62298)	Percheron
6830	James Jensen	Newell	Prince Nagel 52885	Percheron
1083	Richard Geime	Alta	Satan 1813 (25282)	Belgian
6979	Jacon Wartenberger	Storm Lake	Exquisite's Baron 15402	Clydesdale
7047	Laurence Bros.	Marathon	Raymond 74392	Percheron
7083	Geo. Dunlap	Marathon	Physicien 52740 (68048)	Percheron

BUTLER COUNTY.

4583	Wilson & Ray	Aredale	Shelly 11670	French Draft
4506	McGeechy Bros.	Bristow	Governor Swarts 34545	Trotter
4876	Mrs. Edith I. E. Cooper	Allison	Cornil 3398 (46044)	Belgian
6806	Levi Beebe	Clarksville	Sultan 29416	Percheron
6547	Levi Beebe	Clarksville	Ibidem 69204 (81156)	Percheron
6848	Geo. W. Phelps	Shell Rock	Dunton Phelps 53251	Trotter
5248	Andy Consadine	Kesley	Arbo 45303	Percheron
125	G. M. Hartgrave	Dumont	Robert de Lilla (25508)	Belgian
6886	W. J. Feltus	Allison	King Solomon 13886	Clydesdale

CALHOUN COUNTY.

5121	Carl F. Steinbrink	Manson	Foxy Duncan 47942	Trotter
6901	W. W. Griffin	Lake City	Arcolo 56274	Percheron
3468	John Doyle	Pomeroy	Colonel 32306 (44313)	Percheron
3597	J. W. Lockie	Pomeroy	Wrestler Jr. 29323	Trotter
6995	A. C. Engel	Rockwell City	Isoudun 69220 (80154)	Percheron
1754	V. R. Fleener	Manson	Victor 24008 (44560)	Percheron
7053	S. W. Brayton	Lavinia	Hamlet 71616 (73771)	Percheron
5049	Bent Peterson	Lohrville	Stalwart 13563	Clydesdale
7144	John Dean	Rockwell City	Casino 64769 (65452)	Percheron
7162	Dick Fleener	Manson	Ayers 15785	French Draft
7163	Dick Fleener	Manson	Victor 24008 (44560)	Percheron
7180	W. T. McLaughlin	Manson	Rex 62995	Percheron

CARROLL COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6422	A. W. Betts	Coon Rapids	Madison Wonder 9744	Shire
2539	Lee Britchey	Coon Rapids	Prince Model 44268	Percheron
6649	D. J. Lovell	Dedham	Mercure 5258 (58834)	Belgian
6822	J. G. Marritt	Glidden	Perron 69805	Percheron
320	Lohmeier Bros.	Manning	Allison 20290	Percheron
6933	E. M. Blackley	Ralston	Joliet Ben 10081	Shire
4042	E. M. Blackley	Ralston	Lew Karr 44300	Trotter
2326	E. M. Blackley	Ralston	Gervais 47758 (55415)	Percheron
1022	Herbert Winter	Lanesboro	Mouvement 25593 (44687)	Percheron
1700	Theo. S. Bundt	Breda	Hanksoid 33133	Trotter
6951	Frank Stoolman & C. F. Shubbert	Lidderdale	Hallai 71604 (74598)	Percheron
7014	Geo. L. Piper	Glidden	Benour Jr. 47522	Trotter
6125	Frank Venteicher	Carroll	Giorno 64378 (72477)	Percheron
4054	Beeberger & Friemuth	Breda	Rattler Yet 10810	Clydesdale
7189	Henry Leuke	Halbur	Keota Albert 35291	Percheron
5742	Frank Toyne	Lanesboro	King Charming 13517	Clydesdale

CASS COUNTY.

5739	Wm. Toepfer	Atlantic	Glommen 43056 (69424)	Percheron
6836	Scott & Ruch	Massena	Iles 70754 (78902)	Percheron
4930	Miller Bros. & Co.	Atlantic	Tivoli 42657 (66717)	Percheron
6885	Ed. Babb	Griswold	Don Ego 34011	Trotter
6891	S. F. Von	Griswold	Bramhipe Gargrave 10482 (26870)	Shire
6991	W. H. Scarsfield	Marne	Victor 60413	Percheron
7049	F. R. Howard	Anita	Docile 52706	Percheron
3224	H. W. Marsh	Anita	Prince Kirtlebridge 9221	Clydesdale
7101	J. F. Gissible	Anita	Glen of Anita 13837	Clydesdale
7102	J. F. Gissible	Anita	Mac of Anita 13838	Clydesdale
7103	J. F. Gissible	Anita	Prince of Anita 13836	Clydesdale
2781	Albert Kuske	Atlantic	Patriote 27823 (44454)	Percheron
3974	W. H. Petit	Anita	Aigrin 42296 (64638)	Percheron

CEDAR COUNTY.

6359	Elmer Struble	West Branch	Silver Idol Jr. 52802	Trotter
6455	L. P. Yocum	Clarence	Riley P. 47882	Trotter
6656	H. P. Hartley	West Branch	Ideal 62491	Percheron
6721	Geo. Knease	West Branch	Admirable 65325 (66488)	Percheron
4681	D. E. Frederick	Tipton	Gerondif 51933 (71645)	Percheron
653	Jim Tucker	West Branch	Volunteer 22521	Percheron
7064	Geo. Knease	West Branch	Hierocles 65324 (75975)	Percheron
6762	Geo. Knease	West Branch	Germain de Petit 5324 (55568)	Belgian
7098	L. P. Yocum	Clarence	Isidore 67147 (80765)	Percheron
7218	C. L. McClellan	Lowden	Earlville 61284	Percheron

CERRO GORDO COUNTY.

6406	O. B. Swift	Mason City	Lockhart Lad 36138	Trotter
6453	Mat Miller	Dougherty	Alphonso 57430	Percheron
6475	P. H. Murphy	Dougherty	Hommelet 62280 (74493)	Percheron
6766	C. A. Blum	Rockwell	Luxus 51090	Percheron
6536	John Kigney	Dougherty	Polydore de Wodebais 4926 (Vol. 17)	Belgian
4209	M. E. Kinney	Plymouth	Rex Wallace 50520	Percheron
2112	W. F. Andree	Rock Falls	Flamand 1970 (Vol. 12)	Belgian
6833	W. F. Andree	Rock Falls	Valentine 52945	Percheron
7187	P. C. Murphy	Dougherty	Jupiter 56702 (67056)	Percheron

CHEROKEE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6660	J. M. Starr	Cherokee	Price Heart 35909	Trotter
6845	Geo. W. Fessler	Meriden	Sheridan 20894	French Draft
6927	Micham & Micham	Cherokee	Mascadin 2253 (37368)	Belgian
6928	Micham & Micham	Cherokee	Brilliant de Triboureau 5224 (54910)	Belgian
6133	A. C. Lanham	Aurelia	Prince Matchless of Galva 13300	Clydesdale

CHICKASAW COUNTY.

4119	W. J. Merritt	New Hampton	Clipper of Fairfield 39809	Trotter
6728	Frank P. Shekleton	Lawler	Carlos Sant 5427 (Vol. 17)	Belgian
6729	Frank P. Shekleton	Lawler	Romeo d' Haul 5430 (Vol. 18)	Belgian
6730	Frank P. Shekleton	Lawler	Max de la Dreve 5429 (Vol. 17)	Belgian
6731	Frank P. Shekleton	Lawler	Louis de Boingt 5428 (Vol. 17)	Belgian
6732	Frank P. Shekleton	Lawler	Hamel 44608 (74272)	Percheron
6733	Frank P. Shekleton	Lawler	Heros 44609 (76505)	Percheron
6734	Frank P. Shekleton	Lawler	Iatus 44610 (83268)	Percheron
6135	Frank P. Shekleton	Lawler	Ilang 44607 (81464)	Percheron
194	Gilbert Touney	Lawler	Coal Brilliant 49520	Percheron
2480	John Tietjen	Alta Vista	Bernard J. 45624	Percheron
7067	L. Rosaner	New Hampton	Crickit Bryon 47272	Trotter
7166	J. F. Cagley	Nashua	Commodore Perry 6094	Morgan
7185	J. H. Heibel	New Hampton	Only One 52436	Trotter

CLARKE COUNTY.

4608	F. M. Keekey	Woodburn	Victor 42354	Percheron
5843	Hart Bros.	Osceola	Huitain 52574 (76054)	Percheron
6657	Hart Bros.	Osceola	Harnais 53100 (75640)	Percheron
4560	Hart Bros.	Osceola	Powerful 51698	Percheron
5126	C. W. Peterson	Hopeville	Jambo 52041	Percheron
6988	R. B. Husted	Murray	Teddy the Dutchman 12327	Shire
7094	W. M. Tener	Murray	Brown Prince 12326	Shire

CLAY COUNTY.

6373	Frank McDowell	Spencer	Gracie 64839 (71835)	Percheron
4249	E. H. Kruse	Peterson	Lambert 51873 (60121)	Percheron
5900	E. A. Rust	Webb	Timothy Hay 45601	Trotter
6868	A. A. Fena	Spencer	Blucher 40591	Percheron
6942	A. H. Rhode	Spencer	Houchard 62699 (76115)	Percheron
7021	A. J. Smith	Webb	King of Iowa 14335	Clydesdale
424	Patrick Lynch and A. J. Johnson	Royal	Stockwell IV 6858 (20055)	Shire

CLAYTON COUNTY.

2241	Phil Waters	Luana	Mercure 25721 (43490)	Percheron
4677	M. Marshall & P. Cassedy	Elkader	Glandon 51934 (71748)	Percheron
6770	G. E. Bachtell	Elkader	Wynne On 44784	Trotter
2714	Kuehle & Schneider	Elkader	Lion de Buzet (30272)	Belgian
6786	Luxemburg Horse Breeding Ass'n	No. Buena Vista	Carlo de Gerbehaye 5251 (53992)	Belgian
2240	Mrs. Emma Meyers	Littleport	Vigoureux 27390 (48767)	Percheron
6851	Fred White	Volga City	Gladiateur 70544 (71634)	Percheron

CLAYTON COUNTY CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6867	Lon Pettit	Monona	Royal Review 53472	Trotter
1628	John Moyna	Strawberry Point	Bury Colonel 6168 (17220)	Shire
6896	Downey Belgian Horse Co.	Guttenberg	Bayard de Maffles 4805 (Vol. 17)	Belgian
6608	Francis Farmer	Mederville	Intrus 53452 (80858)	Percheron
172	Ernest & Joseph Walter	Luana	Noe (25532)	Belgian
4938	Clennen Bros. & Hurley	Volga	Delcasse 45794 (65021)	Percheron
3619	Dan Schneider & Arno Schmidt	Elkader	Vaneau 31435 (46653)	Percheron
6977	Geo. J. Vorwald	Guttenberg	March Gay Lad 11790 (27988)	Shire
6737	P. H. Grady	Monona	Bayeux 4008	French Coach

CLINTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6472	C. A. Butterfield	DeWitt	Halcantarah 50333	Trotter
6473	C. A. Butterfield	DeWitt	Bert Streator 35267	Trotter
6490	Jos. Kroegmann	Lyons	Red Bird 5902	Morgan
6666	Geo. Corbin	Calamus	Admiral Togo IV 11766 (28001)	Shire
6769	Big Four Horse Co	Lyons	Estragon 55448 (65104)	Percheron
6889	M. N. Shannon	DeWitt	Normand 23226 (43391)	Percheron
6887	M. N. Shannon	DeWitt	Edger 17210	French Draft
6888	Kenney & Cunningham	Lyons	Nilo 17208	French Draft

CRAWFORD COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6411	Geo. Malone	Dow City	Bataclan 12571 (5975)	French Draft
1334	P. T. Flinn	Denison	Absola 43175	Trotter
6742	Geo. W. Binnall	Dow City	Iso 44544 (82155)	Percheron
6839	Bryan Bros.	Arion	Colonel Miller 19095	French Draft
6870	M. E. Lindskoog	Kiron	Prince Edward II 9569	Shire
6960	P. J. Eggers	Denison	Hanap 64863 (74950)	Percheron
6961	P. J. Eggers	Denison	Captain 70938	Percheron
6962	P. J. Eggers	Denison	Vernon 66161	Percheron
6963	Eggers & Fienholt	Denison	Hercule 54958	Percheron
6719	H. Chapman	Vail	Comice 53610 (66355)	Percheron
7128	Harlow Chapman	Vail	Idomene 74580 (80625)	Percheron

DALLAS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
101	D. A. Bennett	Perry	Cerisier 29485 (45168)	Percheron
6443	O. L. Gray	Adel	Merveil 47071 (62269)	Percheron
6494	W. L. VanMeter	Adel	Leroy 17587	French Draft
6686	Geo. B. Clayton	Van Meter	Gustave 2294	Belgian
6712	N. J. Deiling	Dallas Center	The Commander 53725	Trotter
1480	Jacob Forret	Waukee	Flashlight Prince 7701	Shire
3562	James Allen	Woodward	Nobleman (Vol. 7)	German Coach
4343	Chas. Rants	Booneville	Coquet 2766 (41852)	Belgian
6864	J. G. Pierey	Waukee	Cesar d' Odeur 3176 (Vol. 14)	Belgian
1836	Howard Harlow	Woodward	Salem 15092	French Draft
2436	F. L. Moore	Perry	Keota Thrive 24858	Percheron
3080	Geo. W. McCormick	Perry	Avalon 45047	Percheron
102	Theodore Quick	Dexter	Brilliant de Neisvilles 911 (13918)	Belgian
7048	J. H. Royer	Dallas Center	Incroyable 69486 (82398)	Percheron
7074	B. F. Snyder	Dallas Center	Nelson 21172	French Draft
7191	John F. Turner	Linden	Big Bill 21091	French Draft

DAVIS COUNTY.

Cert. No	Name of Owner	Postoffice	Name of Stallion	Breed
6480	J. P. Newman	Bloomfield	Titus 47485	Percheron
6481	J. P. Newman	Bloomfield	Arra 48413	Percheron
6483	J. P. Newman	Bloomfield	Arold Onward 34409	Trotter
6482	T. D. Doke	Bloomfield	Baron Verne 49497	Trotter
6624	H. W. Rider	Bloomfield	Captain Courtland 14339	Clydesdale
6767	O. G. Carr	Drakesville	Doliner 14177	Clydesdale
6768	W. J. Stekel	Drakesville	Alison 14178	Clydesdale
6213	W. J. Stekel	Bloomfield	Buster Brown 19283	French Draft

DECATUR COUNTY.

Cert. No	Name of Owner	Postoffice	Name of Stallion	Breed
6410	S. Snowden	Garden Grove	Elegant de Breuze 4825 (Vol. 16)	Belgian
6493	W. H. Young	Grand River	Castel 51308 (69093)	Percheron
2447	B. E. Rushing	LeRoy	Osceola Champion 11597	French Draft
6663	H. J. Street	Grand River	Barbapoux 42855 (53308)	Percheron
7125	Walker, Davis & Luce	Leon	Gray Boy 53901	Percheron

DELAWARE COUNTY.

Cert. No	Name of Owner	Postoffice	Name of Stallion	Breed
6382	A. B. Holbert	Greeley	Milton de Lauwe 4881 (Vol. 17)	Belgian
6383	A. B. Holbert	Greeley	Beka 4882 (49116)	Belgian
6384	A. B. Holbert	Greeley	Mentor 4883 (47720)	Belgian
6385	A. B. Holbert	Greeley	Brissac de Desseneer 4885 (Vol. 16)	Belgian
6387	A. B. Holbert	Colesburg	Cesar de Marcke 4886 (58576)	Belgian
6388	A. B. Holbert	Greeley	Baron de Thisnes 4887 (Vol. XVII)	Belgian
6389	A. B. Holbert	Greeley	Grenoble 4890 (58564)	Belgian
6390	A. B. Holbert	Greeley	Hippolyte 4888 (Vol. 17)	Belgian
6391	A. B. Holbert	Greeley	Ronan de Bierset 4892 (Vol. 16)	Belgian
6392	A. B. Holbert	Greeley	Cesar de Bray 4891 (Vol. 16)	Belgian
6393	A. B. Holbert	Greeley	Max d' Autchard 4889 (58566)	Belgian
6394	A. B. Holbert	Greeley	Enee 4894 (Vol. 17)	Belgian
6395	A. B. Holbert	Greeley	Odilion 4398 (58562)	Belgian
6396	A. B. Holbert	Greeley	Goldonkel 5389 (2045)	German Coach
6397	A. B. Holbert	Greeley	Meinhard 5387 (1287)	German Coach
6398	A. B. Holbert	Greeley	Imp. General Booth 1348 (10228)	Hackney
6399	A. B. Holbert	Greeley	Imp. Wilton Duke 1350 (11276)	Hackney
6400	A. B. Holbert	Greeley	Imp. March Lord Bingley 1349 (9808)	Hackney
6401	White Oak Grove Horse Co.	Colesburg	Grysman 4730 (58530)	Belgian
6479	A. B. Holbert	Greeley	Prince Priggie 5403	German Coach
6522	Peter Milroy	Hopkinton	Brilliant 43167	Percheron
6554	Geo. L. Tibbits	Hopkinton	Lillie's Improver 9968	Clydesdale
6571	A. B. Holbert	Greeley	Pymoor Protest 11759 (27684)	Shire
6572	A. B. Holbert	Greeley	Upton Duke 11760 (26788)	Shire
6573	A. B. Holbert	Greeley	Thingoe Chief 11761 (28009)	Shire
6574	A. B. Holbert	Greeley	Littleport Thumper 11762 (28002)	Shire
6575	A. B. Holbert	Greeley	What You Want III 11763 (28008)	Shire
6576	A. B. Holbert	Greeley	Stuntney Veno 11758 (25680)	Shire
6577	A. B. Holbert	Greeley	Thingor Royal Harold 11765 (27856)	Shire

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6578	A. B. Holbert	Greeley	Ivy Dray Boy 11764 (27454)	Shire
6581	A. B. Holbert	Greeley	Gallou 53425 (72185)	Percheron
6582	A. B. Holbert	Greeley	Hastings 53426 (74713)	Percheron
6583	A. B. Holbert	Greeley	Herisson 53427 (73521)	Percheron
6584	A. B. Holbert	Greeley	Hernandad 53428 (75944)	Percheron
6585	A. B. Holbert	Greeley	Hoche 53429 (75313)	Percheron
6586	A. B. Holbert	Greeley	Hochet 53430 (73787)	Percheron
6587	A. B. Holbert	Greeley	Hochet 53431 (74152)	Percheron
6588	A. B. Holbert	Greeley	Holopherne 53432 (76300)	Percheron
6589	A. B. Holbert	Greeley	Homonyme 53433 (77404)	Percheron
6590	A. B. Holbert	Greeley	Iby-Ous 53434 (82415)	Percheron
6591	A. B. Holbert	Greeley	Ibrahim 53435 (82973)	Percheron
6592	A. B. Holbert	Greeley	Iles 53436 (81183)	Percheron
6593	A. B. Holbert	Greeley	Illinois 53437 (80833)	Percheron
6594	A. B. Holbert	Greeley	Illois 53438 (79798)	Percheron
6595	A. B. Holbert	Greeley	Illumine 53439 (78730)	Percheron
6596	A. B. Holbert	Greeley	Immediat 53440 (81905)	Percheron
6597	A. B. Holbert	Greeley	Impossible 53441 (78962)	Percheron
6599	A. B. Holbert	Greeley	Indium 53443 (82933)	Percheron
6600	A. B. Holbert	Greeley	Individu 53444 (50909)	Percheron
6601	A. B. Holbert	Greeley	Infernal 53445 (78741)	Percheron
6602	A. B. Holbert	Greeley	Influx 53446 (82944)	Percheron
6603	A. B. Holbert	Greeley	In-Salah 53447 (81021)	Percheron
6604	A. B. Holbert	Greeley	Inscrit 53448 (79806)	Percheron
6605	A. B. Holbert	Greeley	Insinuant 53449 (83407)	Percheron
6606	A. B. Holbert	Greeley	Instable 53450 (82227)	Percheron
6607	A. B. Holbert	Greeley	Instar 53451 (82363)	Percheron
6610	A. B. Holbert	Greeley	Ipsus 53454 (83056)	Percheron
6611	A. B. Holbert	Greeley	Irmak 53455 (83051)	Percheron
6612	A. B. Holbert	Greeley	Irregulier 53456 (79091)	Percheron
6613	A. B. Holbert	Greeley	Irreproachable 53457 (82331)	Percheron
6614	A. B. Holbert	Greeley	Irrite 53458 (79089)	Percheron
6615	A. B. Holbert	Greeley	Isaac 53459 (83445)	Percheron
6616	A. B. Holbert	Greeley	Isabey 53460 (80975)	Percheron
6617	A. B. Holbert	Greeley	Isboseth 53461 (83137)	Percheron
6618	A. B. Holbert	Greeley	Isolin 53462 (80491)	Percheron
6620	A. B. Holbert	Greeley	Ithos 53464 (81061)	Percheron
6621	A. B. Holbert	Greeley	Ixia 53465 (78903)	Percheron
6622	A. B. Holbert	Greeley	on 53466 (83417)	Percheron
6623	A. B. Holbert	Greeley	Ios 53467 (80780)	Percheron
6625	A. B. Holbert	Greeley	olas 5276 (58826)	Belgian
6626	A. B. Holbert	Greeley	Gaspard 5277 (58798)	Belgian
6627	A. B. Holbert	Greeley	nfernal de Lalaing 5278 (Vol. 17)	Belgian
6628	A. B. Holbert	Greeley	Lagardere 5279 (Vol. 17)	Belgian
6629	A. B. Holbert	Greeley	Prosper 5284 (58788)	Belgian
6630	A. B. Holbert	Greeley	Pirate de Lens 5283 (53446)	Belgian
6631	A. B. Holbert	Greeley	Noirhat Coco 5282 (Vol. 17)	Belgian
6632	A. B. Holbert	Greeley	Mouton de Baisy 5281 (58840)	Belgian
6633	A. B. Holbert	Greeley	Maximus de Zuyen 5280 (Vol. 17)	Belgian
6635	A. B. Holbert	Greeley	Carillon du Sart 5296 (Vol. 17)	Belgian
6636	A. B. Holbert	Greeley	Apollon de Saint-Armand 5295 (58786)	Belgian
6637	A. B. Holbert	Greeley	Pompier de B le C 5294 (Vol. 18)	Belgian
6638	A. B. Holbert	Greeley	Jaloux 5293 (Vol. 17)	Belgian
6639	A. B. Holbert	Greeley	Kuroki 5292 (Vol. 17)	Belgian
6640	A. B. Holbert	Greeley	Muchon de Hamel 5291 (56320)	Belgian
6641	A. B. Holbert	Greeley	Achille 5290 (55144)	Belgian
6642	A. B. Holbert	Greeley	Marquis de Thorembais 5289 (56454)	Belgian
6643	A. B. Holbert	Greeley	Abat-Jour 5288 (56690)	Belgian
6644	A. B. Holbert	Greeley	**Pandore** 5287 (55510)	Belgian
6645	A. B. Holbert	Greeley	Echappe de Chateau 5286 (56312)	Belgian
6647	A. B. Holbert	Greeley	Robert 5310 (58796)	Belgian

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6648	A. B. Holbert	Greeley	Carnaval 5309 (Vol. 18)	Belgian
1709	H. P. Peddicord	Greeley	Botha de Wyn (33298)	Belgian
6667	A. B. Holbert	Greeley	Godichon 53556 (72082)	Percheron
6668	A. B. Holbert	Greeley	Ibis 53557 (78575)	Percheron
6669	A. B. Holbert	Greeley	Icoglan 53558 (80609)	Percheron
6670	A. B. Holbert	Greeley	Inconnu 53559 (829[illegible]4)	Percheron
6671	A. B. Holbert	Greeley	Index 53560 (78626)	Percheron
6672	A. B. Holbert	Greeley	Inedit 53561 (83350)	Percheron
6674	A. B. Holbert	Greeley	Insipide 53563 (80119)	Percheron
6675	A. B. Holbert	Greeley	Instruit 53564 (80240)	Percheron
6676	A. B. Holbert	Greeley	Intrus 53565 (83416)	Percheron
6677	A. B. Holbert	Greeley	Ironiste 53565 (79245)	Percheron
6678	A. B. Holbert	Greeley	Isaac 53567 (80558)	Percheron
6679	A. B. Holbert	Greeley	Isola 53568 (81277)	Percheron
6680	A. B. Holbert	Greeley	Istros 53569 (80542)	Percheron
6681	A. B. Holbert	Greeley	Hobereau 4261	French Coach
6682	A. B. Holbert	Greeley	Honrius 4262	French Coach
6683	A. B. Holbert	Greeley	Horticole 4263	French Coach
6684	A. B. Holbert	Greeley	Imp. Hill House Squire 1398 (11069)	Hackney
6685	A. B. Holbert	Greeley	Imp. Stuntney Hero 1399 (11294)	Hackney
6694	A. B. Holbert	Greeley	Demblon de Lalaing 5415 (Vol. 17)	Belgian
6695	A. B. Holbert	Greeley	Domino de Tillier 5417 (Vol. 18)	Belgian
6697	A. B. Holbert	Greeley	Max de Guerne 5419 (58960)	Belgian
6698	A. B. Holbert	Greeley	Octave 5420 (58916)	Belgian
6699	A. B. Holbert	Greeley	Petit 5421 (Vol. 17)	Belgian
6703	A. B. Holbert	Greeley	Troubadour de Gerfine 5422 (Vol.17)	Belgian
6714	A. B. Holbert	Greeley	Herphelin 53613 (74562)	Percheron
6715	A. B. Holbert	Greeley	Greffier 53612 (70283)	Percheron
6716	A. B. Holbert	Greeley	Hommey 53614 (74844)	Percheron
6717	A. B. Holbert	Greeley	Horloger 53615 (76002)	Percheron
6718	A. B. Holbert	Greeley	Invincible 53616 (79374)	Percheron
6720	A. B. Holbert	Greeley	Grandoux 53611 (63897)	Percheron
6726	A. B. Holbert	Greeley	Emir de Godin 5495 (58962)	Belgian
6725	A. B. Holbert	Greeley	Imp. Stuntney Friar 1406 (11293)	Hackney
6727	W. A. Lang & Co.	Greeley	Mi-Careme 5259 (Vol. 16)	Belgian
6839	W. A. Lang & Co.	Greeley	Bacchus de Bove 5245 (54372)	Belgian
6743	W. A. Lang & Co.	Greeley	Grelot 44542 (72461)	Percheron
5651	A. B. Holbert	Greeley	Matador 4340 (52346)	Belgian
6746	W. A. Lang & Co.	Greeley	Jeune Homme 5257 (58826)	Belgian
6765	W. A. Lang & Co.	Greeley	Saxon des Aulnes 5265 (48156)	Belgian
5950	C. B. Packard	Manchester	Munger 47343	Percheron
735	A. B. Holbert	Greeley	Marshall Lasnes 31059	Percheron
6816	A. B. Holbert	Greeley	Heler 53730 (76162)	Percheron
6815	A. B. Holbert	Greeley	Hollandais 53731 (74626)	Percheron
6814	A. B. Holbert	Greeley	Huguet 53732 (74889)	Percheron
6813	A. B. Holbert	Greeley	Gourdin 53728 (71841)	Percheron
6812	A. B. Holbert	Greeley	Harnais 53729 (75711)	Percheron
6510	A. B. Holbert	Greeley	Cameronian 11562	Shire
1940	A. B. Holbert	Greeley	Tarascon 50552 (55555)	Percheron
547	H. V. Williams	Manchester	Joe Anderson 40174	Percheron
6832	A. B. Holbert	Greeley	Incas 75007 (80189)	Percheron
6853	W. A. Lang & Co.	Greeley	Salisbury XI 11768 (28010)	Shire
6866	Enterprise Horse Co.	Ryan	Honore 61670 (73536)	Percheron
122	Carl Heiden	Manchester	Conway Hercule 878	Belgian
2969	Edward Cook	Manchester	Buffalo 41563 (63938)	Percheron
6819	A. B. Holbert	Greeley	Louis 5609 (53518)	Belgian
6820	A. B. Holbert	Greeley	Barnum de Vivegnis 5608 (Vol. 12)	Belgian
6823	W. A. Lang & Co.	Greeley	Carlo de Bois 4734 (Vol. 16)	Belgian
6883	W. A. Lang & Co.	Greeley	Hawton Recorder 11767 (28007)	Shire
6904	A. B. Holbert	Greeley	Imp. Bellville 1408 (11275)	Hackney
2830	W. A. Lang & Co.	Greeley	Clos Vougeot 2203 (33310)	Belgian

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6948	Milo Olson	Manchester	Condor II de Ville 1200 (21738)	Belgian
5902	Meyen & Kleinsorge	Dundee	Perfection 14242	French Draft
7011	A. B. Holbert	Greeley	Hauban 4267	French Coach
1768	Henry Goodhile	Manchester	Ocean 21272 (42903)	Percheron
7114	A. B. Holbert	Greeley	Leporello 5541 (2158)	German Coach
7115	A. B. Holbert	Greeley	Eckermann 5539 (2072)	German Coach
7116	A. B. Holbert	Greeley	Goldsohn 5537 (2144)	German Coach
7117	A. B. Holbert	Greeley	Allheil 5535	German Coach
7118	W. A. Lang & Co.	Greeley	Gallas 76421 (69507)	Percheron
7119	W. A. Lang & Co.	Greeley	Griboulleur 76414 (73071)	Percheron
7120	A. B. Holbert	Greeley	Boquet 5774 (59088)	Belgian
7129	W. A. Lang & Co.	Greeley	Galipot 76418 (72475)	Percheron
7137	W. A. Lang & Co.	Greeley	Fouan 5750 (Vol. 17)	Belgian
7152	Thos. Turner	Ryan	Janus Mentor 34410	Trotter
6076	Harl Pugh	Ryan	Pandur 1529	German Coach

DES MOINES COUNTY.

3841	Wm. A. Gering	Burlington	Carnot de Vlad 2993 (41916)	Belgian
6794	Henry Heibner	Danville	Maynard 63147	Percheron
7219	Frank Collins	New London	Brown Anderson 55260	Trotter

DICKINSON COUNTY.

6500	Range Bros.	Milford	Underley Menestrel 11302 (25731)	Shire
6662	D. V. Palmer	Lake Park	Herisse 68334 (78019)	Percheron
6793	J. L. Clark	Milford	Creston Otto 51958	Percheron
6835	Anthony Long	Milford	Keota Jacob 62271	Percheron
6935	P. S. Mott	Spirit Lake	Louis 4399 (3048)	German Coach
3196	Wm. Warburton	Milford	Archiduc 2522 (Vol. 13)	Belgian
7190	S. Anderson & Sons	Spirit Lake	Fil d' Acier 4771 (41864)	Belgian

DUBUQUE COUNTY.

6658	Petersburg Horse Co.	Dyersville	Pascal 5260 (51050)	Belgian
5224	John Breuggeman	Dyersville	Prince Albert 3786 (13932)	Belgian

EMMET COUNTY.

6348	C. J. Trowbridge	Dolliver	Boro Hero 10229 (24978)	Shire
6881	Frank Taylor	Wallingford	Black Diamond 26279	Percheron
2778	Paulson Bros.	Helfa	Armando 46270	Percheron
4937	Fred Heidecker	Wallingford	Porter B. 27755	Percheron
6987	Geo. W. Murray	Estherville	St. Patrick 65362	Percheron
7028	W. H. McClune	Dolliver	King Harold VII 12401 (23406)	Shire
7029	T. F. Coughlin	Estherville	Iffland 74141 (80350)	Percheron

FAYETTE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6554	Alfred Roberts	Arlington	Maze Brilliant 1070 (10510) .	Hackney
6355	Alfred Roberts	Arlington	Elvedon Fear None 11205 (26194)	Hackney
6356	Alfred Roberts	Arlington	Hoche 62282 (77374)	Percheron
1773	E. J. Campbell	Arlington	Keota Count 19469	Percheron
6441	Chauncey W. Smith	Arlington	Expert 27769	Percheron
6442	Chauncey W. Smith	Arlington	Romeo II 54458	Percheron
6650	E. L. Nus	Arlington	Cartel de Boussu 5252 (Vol. 17)	Belgian
6619	Geo. Leyh	Sumner	Istor 53463 (83433)	Percheron
6838	L. L. Wenger	Elgin	Ignoble 4693 (Vol. 16)	Belgian
6858	L. V. V. Humphrey	West Union	Io 73914 (80457)	Percheron
6861	Ole N. Loftsgard	Elgin	Poupard 63838 (67037)	Percheron
6365	W. K. Humphrey	Fayette	Marcouf 48928	Percheron
6966	Henry Turner	Arlington	Edison 4274 (52350)	Belgian
6696	Alfred Roberts	Arlington	Hockey 5418 (58958)	Belgian
7003	H. J. Belschner	Hawkeye	Pantin 54556 (69011)	Percheron
7042	Highland Percheron Horse Co.	Elgin	Istrio 67834 (82673)	Percheron
5782	E. H. Caudle	Fayette	Vandoc 17250	French Draft
3271	Myron E. Talcott	Maynard	Turbigo 51038 (56820)	Percheron
7174	W. H. Aubrey	Oelwein	Gold Star 15437 (14151)	Clydesdale

FLOYD COUNTY.

6655	Lew Carbiener	Marble Rock	Flash Light 59730	Percheron
4058	Archie Milloy	Rockford	Black Hawk Prince 45640	Percheron
6998	Archie Milloy	Rockford	Faneur II de Bett 5587 (Vol. 17)	Belgian
7027	A. E. Gates	Marble Rock	Cetonnais 59739 (61912)	Percheron
2389	H. J. Stoecker	Charles City	Boliver 40111 (46462)	Percheron
134.	H. J. Stoecker	Charles City	Rene II 21276 (42468)	Percheron
6466	H. J. Stoecker	Charles City	Gondolier 17271 (1282)	French Draft

FRANKLIN COUNTY.

7105	John Vought	Hampton	Ben Holbert 58621	Percheron
7106	John Vought	Hampton	Jumbo 61322	Percheron
7213	J. N. Switzer	Geneva	Mack 57739	Percheron

FREMONT COUNTY.

7107	Nels A. Anderson	Farragut	Harthur 62693 (77338)	Percheron
7108	Nels A. Anderson	Farragut	Minier Ben 8717	Shire
7123	Nels A. Anderson	Farragut	Lohengrin 4869 (1781)	German Coach

GREENE COUNTY.

6511	C. V. Robson	Scranton	Orphan Prince 11560	Shire
6437	Neild & Metzger	Grand Junction	Monarch 11528	Shire
2842	F. P. Casey	Jefferson	Fortune 41633	Percheron
6798	Benj. Phillips	Jefferson	Bryan 20646	French Draft
5754	J. M. Hammar	Jefferson	Genesic 63848 (69688)	Percheron
4773	I. F. Peacock	Churdan	Monarch 55603	Percheron
6236	A. L. Smith	Jefferson	Yangleur 65642 (66599)	Percheron
5725	C. W. Rockel	Grand Junction	Loughton Squire 10629 (26896)	Shire
7127	C. A. Fleck	Jefferson	Iturbide 70055 (82110)	Percheron
7214.	Scranton Percheron Horse Co.	Scranton	Golden King 63008	Percheron
7215	Scranton Percheron Horse Co.	Scranton	Innocent 65013 (79339)	Percheron

GRUNDY COUNTY.

Cert. No	Name of Owner	Postoffice	Name of Stallion	Breed
4784	A. Billman	Dike	Gresillon 55184 (71724)	Percheron
6958	P. J. Baasch	Conrad	Sultan 55653	Percheron
7025	C. O. Dirks	Holland	Devereaux 51953	Percheron
7061	A. L. Strickler	Conrad	Colonel 20478	French Draft
892	J. M. Brassfield	Beaman	Touraine 40953	Percheron
7176	John Tjaden	Wellsburg	Baxter 63407	Percheron
7177	John Tjaden	Wellsburg	Blucher 66266	Percheron
7178	John Tjaden	Wellsburg	Mascot 55741	Percheron
7179	A. J. Jaspers	Wellsburg	Pilot Archie 10025	Shire

GUTHRIE COUNTY.

Cert. No	Name of Owner	Postoffice	Name of Stallion	Breed
6370	Henry Tasler	Yale	Gordon 4324 (Vol. 16)	Belgian
6446	A. P. Bullard	Panora	Glard 64830 (70846)	Percheron
6736	Chris Beller	Panora	Majot de Quievrain 4724 (Vol. 17)	Belgian
6745	E. D. Conway	Casey	Moulton Bell Ringer 11794 (27981)	Shire
6790	Sheehan Bros.	Stuart	Sampson 55396	Percheron
5709	Sheehan Bros.	Stuart	Idalgo 42840 (80091)	Percheron
6496	Dick Groves	Bayard	Millionaire 43333	Percheron
5791	C. E. Cope	Guthrie Center	Eric 53799	Percheron
7005	L. C. Hardin	Bayard	Bazan 40138 (52154)	Percheron
2196	D. J. Ellwanger	Jamaica	Pompon Jr. 45197	Percheron
7055	Mrs. M. M. Curry	Bayard	Charley Kane 31235	Trotter
7097	H. M. Robinson	Bagley	Fizeau 74565	Percheron
7109	W. J. O'Brien	Bayard	Witchford Whip 9956 (25837)	Shire
7110	W. J. O'Brien	Bayard	Carlo de Taviers 4316 (Vol. 16)	Belgian
7154	W. M. Schrader	Stuart	Hard Times 11115	Clydesdale

HAMILTON COUNTY.

Cert. No	Name of Owner	Postoffice	Name of Stallion	Breed
6376	Nels N. Fardal	Stanhope	Cosaque de Jausselette 3716 (37688)	Belgian
6504	E. T. Friedrich	Stratford	Quarius 283	German Coach
6505	E. T. Friedrich	Stratford	Keota Alexander 49056	Percheron
11	Halsne & Co.	Williams	Diamond Dick 2608	French Coach
6787	Carl Bentson	Jewell	Bravo de la Comte 5249 (50090)	Belgian
1121	T. E. Thompson	Ellsworth	Pluton de Liroux (23044)	Belgian
6882	Ole Millang	Williams	Hastaire 71805 (73926)	Percheron
6917	Peter Hove	Stanhope	Victor 19464	French Draft
6918	Peter & Lewis Hove	Stanhope	Apollon de Gentinnes 2708 (39422)	Belgian
6999	Dennis Murphy	Williams	Ipocuit 75764 (79449)	Percheron
7031	Z. S. Talcott	Williams	Captain 43431	Percheron
327	W. A. Dawson	Webster City	Phil Frye 42574	Trotter
7130	Millard Busby	Blairsburg	Diamond Prince 21522	French Draft
4082	Millard Busby	Blairsburg	Perfection 16654	French Draft

HANCOCK COUNTY.

Cert. No	Name of Owner	Postoffice	Name of Stallion	Breed
3631	A. B. Sawyer	Garner	Scranton 42331	Percheron
5903	Fred Cook, Jr.	Corwith	French Victor 16876	French Draft
6874	John Dominy	Goodell	Bismuth de Goyer 5222 (56136)	Belgian
6945	Wm. F. Erdman	Corwith	Major 50211	Percheron
7026	C. L. Palmer	Britt	King Altone 51041	Trotter
7084	James Pedley	Britt	Forest King 14076	Clydesdale
5392	R. B. McCormick	Britt	John A. Donald 11146	French Draft

HARDIN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6374	Chris Risse	Hubbard	Fox de Bain 3637	Belgian
6371	D. D. Leach	Eldora	Tom Genaro 44600	Trotter
1536	O. M. Harp	Alden	Junot 35620 (53132)	Percheron
3475	O. M. Harp	Alden	Earl of Alden 43471	Trotter
5743	Henry Miller	Hubbard	Burdette 43734	Percheron
6854	L.W. Wengert	Iowa Falls	Black Boy 50108	Percheron
6875	E. L. Kennedy	Eldora	Santa Claus 65870	Percheron
7002	W. A. McBride	Alden	Krac de Thuillies 5452 (52890)	Belgian
5746	W. H. Steinfeldt	Eldora	Highland Castle Logan 43026	Percheron
7158	B. L. Morgan	Alden	Listo 01461	Trotter
1782	Sylvester Wareham	Alden	Percy Woodside 41028	Percheron

HARRISON COUNTY.

6665	C. M. McMillan	Woodbine	Galerius 53103 (71980)	Percheron
6824	Arthur Hillman	Logan	Banker Boy 53814	Percheron
7012	Geo. W. Hull	Dunlap	Tacoma 17787	French Draft
7079	Fred Conyers	Little Sioux	Doc Woods 9686	Shire
7112	Wm. Haskins	Logan	Iroquois 64986 (78869)	Percheron
7188	Andrew Jackson	Pisgah	Alford Swell 43959	Percheron
7198	Chas. F. Putnam	Magnolia	Nicholson L. 51086	Trotter

HENRY COUNTY.

4151	J. M. Plants	Winfield	Glaneur 22711 (43051)	Percheron
6470	L. M. Hartley	Salem	Carr's Prince 48817	Percheron
6379	L. M. Hartley	Salem	Anzoux 55798	Percheron
6380	L. M. Hartley	Salem	Habit 62440 (75377)	Percheron
6509	S. C. Boley	Hillsboro	Robe 56377	Percheron
6517	C. M. Clark	Mt. Pleasant	Cecillian 2nd 46731	Trotter
5920	W. K. Henss	Wayland	Kermet H. 52370	Trotter
6651	A. M. Meeker	Winfield	Histigri 70755 (74413)	Percheron
6654	L. G. Wenger	Wayland	Wayland Alexander 11074	Shire
6994	A. H. Heaton	Hillsboro	Darling's Prince 15620	Clydesdale
5948	Chas. C. Eckey	Winfield	Crown Duke 11221	Shire
7054	James R. Gillis	Mt. Pleasant	Orphan Boy 67479	Percheron
5410	Nelson Cornick	Mt. Pleasant	Wyvis 50320	Trotter
6652	Emerson Brown	Salem	Roger 19132	French Draft
7210	C. F. Hoaglin	Hillsboro	Jaillou 73884 (85512)	Percheron
1281	C. F. Hoaglin	Hillsboro	Brown Wheeler 39319	Trotter
3574	Jake Beckley	Hillsboro	Pat Crown 43203	Trotter

HOWARD COUNTY.

1645	E. H. Folkes	Lime Springs	Epernon 34916 (46591)	Percheron
6673	Klingsheim Bros.	Lime Springs	Ingenu 53562 (83032)	Percheron
6634	J. J. Korbel	Cresco	Rhum 5285 (58802)	Belgian
7004	Keune & Browner	Cresco	Invariable 70405 (80186)	Percheron
136	M. Svoboda	Cresco	Estevan 40356 (51744)	Percheron
7186	Stroup Bros.	Lime Springs	Duke of Green Hill 13615	Clydesdale

HUMBOLDT COUNTY.

6405	Matt Callahan	Humboldt	Wisconsin Bill 36664	Trotter
6705	Hawley & Ives	Pioneer	Fichaux de Hellebecq 5363 (Vol. 17)	Belgian
6706	Hawley & Ives	Pioneer	Bourgogne de Thy 5361 (Vol. 17)	Belgian
6707	Hawley & Ives	Pioneer	Bismark II 5360 (58884)	Belgian
6708	A. W. Hawley	Pioneer	Brutus de Leeuw 5562 (Vol. 17)	Belgian

HUMBOLDT COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6747	W. H. Martin	Renwick	Arlate 69116	Percheron
5953	Jorgan Tokhein	Thor	Chainville 52371 (66409)	Percheron
2359	Henry Hundertmark	Ottosen	Major de Corroy 2533 (24426)	Belgian
6430	Chas. O'Neil	Livermore	Accellerator 10434 (25851)	Shire

IDA COUNTY.

6531	Frank W. Foster	Battle Creek	Hachis 53214 (77632)	Percheron
6243	Baxter Bros.	Galva	Selby 45452	Percheron
6862	Elroy Walrod	Battle Creek	Alphonso 18236	French Draft
6863	Elroy Walrod	Battle Creek	Goodenough 13371	Clydesdale
6931	Frost Newman	Galva	Giston 68426 (71873)	Percheron
2776	Thompson Bros.	Holstein	Blaisdon Victor 7110 (29267)	Shire
5079	S. W. Nailor	Ida Grove	Francoeur 48941 (62869)	Percheron
7147	Stewart Bros.	Holstein	Prince of Tarbet 13026	Clydesdale

IOWA COUNTY.

6429	James Doran	Victor	Naro D. 48781	Trotter
6499	Geo. L. Gates	Marengo	Major Pickering 48474	Trotter
1169	T. R. Miller	North English	Roylander 30695	Trotter
6556	A. J. Clark	Ladora	Zoo Zoo B. Jr. 51232	Trotter
6557	A. J. Clark	Ladora	A. J. C. 51231	Trotter
6567	W. V. Hixson	Marengo	Barney 14182	Clydesdale
6568	W. V. Hixson	Marengo	Baron Findlay 14184	Clydesdale
6569	W. V. Hixson	Marengo	Baron Delightful 14181	Clydesdale
6570	W. V. Hixson	Marengo	Baron's Prince 14204	Clydesdale
2790	David Roth	Williamsburg	Sefton 13221	Clydesdale
7071	Bigler Bros.	Victor	Porte Martin 58009	Percheron
7135	J. E. Cox	Williamsburg	Etendard 20541 (872)	French Draft
7216	H. M. Hall	North English	Keota George 62258	Percheron

JACKSON COUNTY.

6350	Wm. Gibson	Maquoketa	Minoco 45846	Trotter
1584	Walter Moorehead	Maquoketa	Black Dragon 5583	Shire
6738	O. F. Osburn and Guy Hathaway	Preston	Bismark 5247 (53720)	Belgian
6700	Rubel & Sturm	Spring Brook	Diabolo Heurne 5416 (Vol. 17)	Belgian
6804	R. J. Crawford	Miles	Robert de Thol 5184 (Vol. 17)	Belgian
7041	Geo. & Frank Schaefer	Preston	Carabin 5250 (57678)	Belgian

JASPER COUNTY.

6361	Baxter - Melbourne Horse Co.	Baxter	Bakewell 13807 (13966)	Clydesdale
6377	A. F. Bohne	Newton	Grosbois 62361 (72828)	Percheron
6445	Walter Wilkinson	Prairie City	Kirkland's King 10938 (26931)	Shire
6452	V. C. Eichener	Killduff	Harika 64382 (76608)	Percheron
6372	Ringenberg & Franklin	Mingo	Ben Hur 64212	Percheron
956	Hart Zachary	Prairie City	Monarch 13475	French Draft
6849	Ira Smith	Monroe	Holery 62688 (76516)	Percheron
6037	E. C. Emmack	Metz	Hack 61430 (73655)	Percheron
6902	Bower T. Murphy	Newton	Interdit 69489 (79947)	Percheron
6938	George Baker	Newton	Istroth 64979 (79934)	Percheron

JASPER COUNTY—COUTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6974	Frank J. Pease	Colfax	Sultan Chief 11600	Shire
6263	Nollen Bros.	Monroe	Robert de Dender 3382 (42270)	Belgian
5538	Crawford & Griffin	Newton	Comodore 55611	Percheron
7150	E. N. Gates	Newton	Gaviel 61373 (69712)	Percheron
7172	Earl Efnor	Reasoner	Forton d' Orbais 4903	Belgian

JEFFERSON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6457	Joel Haskins	Pleasant Plain	Victor 19880	French Draft
2211	Maasdam & Wheeler	Fairfield	Lamy 46057 (56473)	Percheron
6775	C. W. Benn	Packwood	Gredin 64447 (73279)	Percheron
6776	C. W. Benn	Packwood	Sheffield 42480	Percheron
6802	Nady Bros.	Fairfield	Irai 70980 (81429)	Percheron
6803	Nady Bros.	Fairfield	Ibis 70981 (81157)	Percheron
6807	F. M. Cleavenger	Packwood	Lucifer de Gon 5228 (54218)	Percheron
635	Willis Reno	Batavia	Duc II de Montfort 2424 (25232)	Belgian
6856	Edgar Vorheis	Lockridge	Prince David 48725	Percheron
5282	J. C. & John R. Hagen	Libertyville	Rex 51158	Percheron
6955	W. C. Miller	Libertyville	Irradie 72095 (83361)	Percheron
6956	W. C. Miller	Libertyville	Robert of Fairfield 51388	Percheron
7035	Prince & Hisel	Fairfield	Invalide 71827 (79662)	Percheron
7036	Prince & Hisel	Fairfield	Hospadar 71824 (77276)	Percheron
7037	Prince & Hisel	Fairfield	Halifax 71829 (77621)	Percheron
7056	Bladensburg Horse Co.	Batavia	Pluton 55907	Percheron
7076	J. S. Miller	Abingdon	Doctor Roy 12197	French Draft
7077	J. S. Miller	Abingdon	Marescot XI 26845	Percheron
7078	J. S. Miller	Abingdon	Jim Gill 33781	Trotter
7099	J Lewis McCleary	Libertyville	Rock 21446	French Draft
7100	J. Lewis McCleary	Libertyville	Benn 63227	Percheron
7133	Chas. Walton	Pleasant Plain	Prince 21395	French Draft

JOHNSON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5581	F. S. Myers	Martell	Galaga 53677 (71027)	Percheron
3488	Mrs. Geo. W. Pinney	Iowa City	Governor Curtain 34096	Trotter
527	Frank Anderle	Solon	Mabille 23069 (44574)	Percheron
561	J. H. Douglas	Iowa City	Elu 51835 (63252)	Percheron
048	Frad M. Baker	Lone Tree	Scot Laddie 13562	Clydesdale
4534	Leo S. Hirt	Hills	Black Squirrel 44520	Trotter
780	D. J. Berkey & Son	Iowa City	Barnum Pierre 5489 (58896)	Belgian
6781	D. J. Berkey & Son	Iowa City	Jal 71037 (89360)	Percheron
6850	Wesley Novotny	Curtis	Neron de Kerkom 5457 (55236)	Belgian
7159	J. M. Carl	Lone Tree	Tip G. Sentinel 55318	Trotter
7161	M. Williams	Iowa City	Dermod 46123	Trotter

JONES COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6515	John Greiser	Monticello	Morton II 23848	Percheron
5052	Bert Peck	Wyoming	Robert d' Hannonsart 3747 (42526)	Belgian
4849	Earl S. Coppess	Olin	Marky 23932	Percheron
6873	W. S. Leggett	Monticello	Fearless Prince 14666	Clydesdale
6919	A. Simmons	Olin	Hecla 70570 (75308)	Percheron
6929	Wm. A. Hale	Anamosa	Hawkeye Brilliant 53020	Percheron
3298	Wm. Stoll & J. W. Shields	Wyoming	Young Roosevelt 11081	Clydesdale
6949	Pleasant Hill Percheron Horse Co.	Olin	Hardin 71587 (75504)	Percheron
1043	Edw. Fairley	Center Junction	Marcos B. 41312	Trotter

KEOKUK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6462	J. C. Ulin	Delta	Gondolier 64976 (72839)	Percheron
3150	J. G. Harris	What Cheer	Blackbrooke Verona 8606 (20259)	Shire
2398	Hubert Lewis	Hedrick	Ali 41511 (60307)	Percheron
6001	Hubert Lewis	Hedrick	Equateur de Wevelghem 1912 (26760)	Belgian
6912	M. Yoakum	Webster	Wesley 20861	French Draft
5399	Roy Shelly	Ollie	Pilote 57021 (68325)	Percheron
6975	W. W. Lutton	North English	Hieron 60835 (75976)	Percheron
6202	Smith & Baumert	South English	Galerne 63843 (70170)	Percheron
7046	Smith & Baumert	South English	Keota Herculese 62042	Percheron
1591	G. W. Bensler	Delta	Postillon 13743 (53841)	French Draft
1502	Morton Bros.	Thornburg	Blackstone II 54518	French Draft
1515	Ellsworth E. Cooper	What Cheer	Capitain 193	German Coach

KOSSUTH COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6407	T. F. McGovern	Whittemore	Vincenzo II 66672	Percheron
2902	Sexton Clydesdale Horse Co.	Algona	Mac Niven 8655	Clydesdale
6484	W. R. Jacobs	Swea City	Bellaire 52821	Percheron
6659	Leroy McWhorter	Burt	Dan 18669	French Draft
4778	John V. Elbert	Whittemore	Major de Marck 3381 (46640)	Belgian
4012	Geo. E. Sanders	Elmore, Minn	Bakau 3079 (40880)	Belgian
6785	Porter Badje	Titonka	Atella 74222 (59168)	Percheron
6818	C. B. Hutchins	Algona	Sheldon Boy 69804	Percheron
6828	Max Osterbower	Swea City	Robert 56147	Percheron
1471	Lotts Creek Horse Co.	Lone Rock	Orleans (25132)	Belgian
6895	Lee Martin	Bancroft	Brilliant II 18588	French Draft
6900	H. A. Bonnstetter	Whittemore	Tremeau 66376	Percheron
2462	Hiram Wright	Algona	Jeun Brin d' Or 1014 (15232)	Belgian
4976	Powelson Bros.	Wesley	Neptune 3761 (39114)	Belgian
2795	A. I. Smith	Germania	Peter the Great 20321	Percheron
1432	Corle Bros.	Algona	Condor 44607	Percheron
7009	Lee Martin	Bancroft	Olivier 51834 (58082)	Percheron
4803	Lee Martin	Bancroft	Cadet de Lauzelles 3577 (40372)	Belgian
7089	David Farrow	Ledyard	Milbank 53847	Percheron
4781	Edward L. Fitch	Sexton	Gramont 51895 (69398)	Percheron
7165	P. A. McArthur	Algona	Ben Hur 60043	Percheron
7171	C. B. Allbright	Algona	Moulton Darnley 9281 (28824)	Shire

LEE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
7045	J. C. Foggy	West Point	Tissot 46739	Percheron
6801	A. Bullard	Montrose	Index 70795 (79925)	Percheron
7200	M. H. Van Tuyl	West Point	Young Seba 53056	Trotter

LINN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
676	W. L. DeClow	Cedar Rapids	Fourire 34325 (46288)	Percheron
6423	W. L. DeClow	Cedar Rapids	Heron 64826 (75832)	Percheron
6435	W. L. DeClow	Cedar Rapids	Galesville Pride 51915	Percheron
6491	W. L. DeClow	Cedar Rapids	Baron de Moustier 4772 (Vol. 16)	Belgian
5100	Geo. H. Van Natta	Marion	Nugget, Jr. 57722	Percheron
6521	McCurdy & Ketchum	Central City	Osborn's Dewey 9140	Clydesdale
6844	Thos. Burhaw & Andrew Jordanger	Cedar Rapids	Mardi Gras 21035 (6517)	French Draft
4121	E. H. Knicker-			

LINN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
	bocker & Son	Fairfax	Prince Henry 10645	Clydesdale
6852	Frank Novak & Joe Kvenensky	Fairfax	Diabolo 5446 (52672)	Belgian
6857	E. H. Knickerbocker & Son	Fairfax	Clereco 49658	Trotter
6877	E. H. Knickerbocker & Son	Fairfax	Hamite 71437 (78410)	Percheron
6897	W. J. Kemp	Marion	Colo 69780	Percheron
6898	W. J. Kemp	Marion	Ringo 55691	Percheron
4160	J. W. Wilkins	Cedar Rapids	Armac de Lierde 3076 (Vol. 14)	Belgian
2257	John Henry	Fairfax	Tomtom (6025)	French Draft
7019	Spitzer Bros.	Central City	Victor 45716	Percheron
1333	Central City Draft Horse Co.	Central City	Evadne de Pepinghen 1887 (28074)	Belgian
7104	L. P. Smith	Cedar Rapids	Controleur II 20159	Percheron
7151	Allen Bros.	Marion	Tom Grundy 42268	Trotter
7157	N. A. York	Lisbon	Al Lund 49430	Trotter

LOUISA COUNTY.

1113	H. Z. Kerr	Columbus Jct	Albert Sidney Johnson 42345	Percheron
6503	R. E. Davis	Columbus Jct	Wellington 19827	French Draft
6502	W. J. Henderson	Morning Sun	Allerio Jr. 52192	Trotter
6530	Metzger Bros.	Wyman	Prince Edward 69514	Percheron
6941	Kindlesparger Bros.	Columbus Jct	Ergo 4318 (52314)	Belgian
7020	Arthur Bros.	Columbus Jct	Minnie's Pride 11241	French Draft
6598	Arthur Bros.	Columbus Jct	Imprevu 53442 (78921)	Percheron
7051	W. F. Marston	Columbus Jct	Brilliant U. S. II 61162	Percheron
7136	H. O. Weaver	Wapello	Wrydeland's Friar 9863 (25825)	Shire
7149	J. A. Reid	Morning Sun	Carlo II 4523 (52462)	Belgian
7156	Wm. Moore	Wapello	Norman Egbert 9307 (24498)	Shire
4719	H. O. Weaver	Wapello	Standpatter 38618	Trotter

LUCAS COUNTY.

6351	Chandler Bros.	Chariton	Nic Duroc 56693	Percheron
6458	Oliver & Wolverton	Derby	Midnight 49667	Percheron
4851	Ward Carpenter & W. P. Schrenck	Chariton	Don 45212	Percheron
1288	Oliver & Wolverton	Derby	Sampson 34732	Percheron
7205	R. O. Miller	Lucas	Hommage 57875 (74860)	Percheron
7206	R. O. Miller	Lucas	Right Choice 14601 (9512)	Clydesdale
7207	Henry Holt	Chariton	Baron Hill 15185	Clydesdale
3296	R. O. Miller & Levi S. Willey	Lucas	Mont 47722	Percheron

LYON COUNTY.

6821	A. M. George	Rock Rapids	Paul de Mellery 5230 (57942)	Belgian
2490	Chrid Geerdes	George	Allegro 20046	Percheron
2934	John Beek	Doon	Adalgo 2521 (37454)	Belgian
6971	Wright & Maier	Larchwood	Romane 28159 (44488)	Percheron
6972	Henry Horn	Larchwood	Apros 58965 (66476)	Percheron
6976	Carl Bunte	Rock Rapids	Charbourg 18223	French Draft
6973	Henry Horn	Larchwood	Hans 58708	Percheron
7085	H. T. Gulk	Larchwood	Hugo 50866	Percheron
7095	L. W. Anderson	Edna	Signal 16388	French Draft
4596	David Grafft	Rock Rapids	Chancellor 29731	Percheron
6761	R. A. Kitchen	Rock Rapids	Rubin de Saint Girard 5330 (51366)	Belgian

MADISON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6358	G. H. Martin	St. Charles	Glaneur 52919 (72604)	Percheron
6367	Lee C. Bennett	Winterset	Ali Baba 4827 (51752)	Belgian
6492	Bennett Bros.	Earlham	Glouglou 53099 (72483)	Percheron
6038	Frank Iiams	East Peru	Miroir 29582 (43621)	Percheron
6774	L. J. Camp	East Peru	Armour 17881	French Draft
6809	W. H. Milleson	Winterset	Britanique 4803 (52410)	Belgian
6831	Lawn Watson	Winterset	George 53773	Percheron
1606	Clarence Wilson	Macksburg	Soham Insurgent 6735 (Vol. 24)	Shire
6982	Lee Bennett	Earlham	Osceola Tom 11470	Shire
7138	W. S. Eppard	Earlham	Colonel King 10656	Shire
7139	W. S. Eppard	Earlham	Honest George 10655	Shire
7181	T. C. Maxwell	Earlham	Tempest 75415	Percheron
7224	C. B. Freeborn	Earlham	Mayor 65844	Percheron
7223	C. B. Freeborn	Earlham	Major 65845	Percheron

MAHASKA COUNTY.

6465	Joe R. Moore	Barnes City	Plunger 18775	French Draft
1999	W. S. Kisor & Sons	New Sharon	Pedro 50545 (55549)	Percheron
6524	Tilton Horse Co.	Tilton	Abricot 62692 (67422)	Percheron
6558	Wm. Gott, et al.	Rose Hill	Neigeux 34014 (45294)	Percheron
1590	Edw. Blattner	Sigourney	Tirelarigot 13039 (57124)	Percheron
6579	R. H. Barnes	Leighton	Bijo 69982	Percheron
6580	R. H. Barnes	Leighton	Diaz 69983	Percheron
6782	A. L. Ross	Barnes City	Apollo 4839	German Coach
6788	J. Hill Barnes	Oskaloosa	Triboullet 72735	Percheron
6834	Sam Van Hemert	Oskaloosa	Golden Count 19200	French Draft
7069	A. E. Price	Leighton	Bay Leo 01489	Trotter

MARION COUNTY.

6427	J. B. Elliott	Knoxville	Bonnivard 50127	Trotter
6428	J. B. Elliott	Knoxville	Maxwelton Doune 52836	Trotter
6456	Chas. Bridges	Knoxville	Rex Duroc 52605	Trotter
2403	F. T. Williams	Pleasantville	Taupin 42878 (56415)	Percheron
6514	J. A. Hughes	Percy	Warren Rex 52604	Trotter
2581	C. F. Keding	Knoxville	Bristol Lange 1441 (25360)	Belgian
6513	Wade Harvey	Harvey	Hippocrate 57276 (73559)	Percheron
3847	I. A. Ward	Knoxville	Montmirail 28442 (45040)	Belgian
6796	C. E. Hyer	Knoxville	Duke William 8360	Shire
6799	C. L. Hardman	Knoxville	Bury Permit 11789 (27151)	Shire
6800	C. L. Hardman	Knoxville	Iran 64997 (78632)	Percheron
1278	W. J. Bivans	Percy	Matchfield Jr. 12634	Clydesdale
6893	F. M. Ridgeway	Swan	Iliva 64994 (79398)	Percheron
909	T. P. Overton	Tracy	Stuntney Lubin 6731	Shire
4629	M. M. Wren	Knoxville	Stalica 42738 (65987)	Percheron
3332	A. L. Harvey	Harvey	Armand 25587 (42962)	Percheron

MARSHALL COUNTY.

6425	S. P. Girton & Sons	State Center	Rambler 56032	Percheron
6872	Sherman Wolfgang	Marshalltown	Cassius 21038 (6765)	French Draft
6903	Henry Leise	Liscomb	Chroniqueur 69753 (63776)	Percheron
3369	Reimenschneider & Sellers	State Center	Grimaud 41197 (60489)	Percheron
5616	Reimenschneider & Sellers	State Center	Rideau 52572 (67194)	Percheron
6947	Frank Bodie	State Center	Davie Rattler 12231	Clydesdale
5406	E. W. Harmon	Marshalltown	Granite Grattan 45335	Trotter
4124	Melbourne Belgian Horse Co.	Melbourne	Orange II de Vels 3097 (Vol. 14)	Belgian

MILLS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
7001	Geo. Schurr	Strahan	Ige 70420 (81399)	Percheron
7000	Geo. Schurr	Strahan	Billingsford Brewer 11371 (27024)	Shire
176	Wm. Lloyd	Glenwood	Lord Gregory 42903	Trotter

MITCHELL COUNTY.

4426	W. E. Peavey	Riceville	Mahomit George 48485	Trotter
3808	Joseph Pitzen	Stacyville	Josias 51504 (66166)	Percheron
6916	Stephen T. Doyle	Riceville	Bon Telys 11540 (24970)	Shire
6967	W. D. Rung & D. E. Harnegan	Osage	Herboriate 57367 (73525)	Percheron
6993	C. B. Wilkes	Riceville	Riceville Pride 45397	Trotter
7072	G. E. & H. E. Shriber	Riceville	Iguth 70406 (79437)	Percheron
5770	H. J. Koschmeder	Mitchell	Royal Marksman 12345	Clydesdale

MONONA COUNTY.

6360	F. E. McGarr	Castana	U. S. Pointer 0626	Trotter
2711	Vene Holman	Mapleton	Pollux de Caviera (30032)	Belgian
1248	C. E. Moorhead	Moorehead	Guignol 261112 (46826)	Percheron
3456	Ole G. Norby	Moorehead	Cartouche 35811	Percheron
6968	A. M. Larson	Whiting	Hidalgo 43965 (75299)	Percheron
1494	Harris Bros.	Moorehead	Ethan Allen 30974	Percheron

MONROE COUNTY.

6552	B. F. Clark	Albia	Clyde of the West 11413	Clydesdale
6892	J. F. Coleman	Melrose	Courteil 32349 (43988)	Percheron

MONTGOMERY COUNTY.

6464	D. B. Gunn	Red Oak	Joseph the Banker 52087	Percheron
6487	John P. Warne	Villisca	Van 19759	French Draft
6523	John Warren	Villisca	Horipile 53009 (76792)	Percheron
6890	W. L. DeWitt	Elliott	Cowley Manners 11260 (26085)	Shire
6930	John F. Warne	Villisca	Black Cafe 19760	French Draft
1274	E. D. Wilson	Elliott	Greviste 30617 (43717)	Percheron
6992	Halcock Bros.	Elliott	Gold Ring 11264 (27955)	Shire
7091	Gourley Bros.	Villisca	Halo 52569 (74957)	Percheron
7141	A. W. Jacobs	Villisca	Napton Boy Jr. 49332	Trotter

MUSCATINE COUNTY.

6439	E. W. Horton	Muscatine	Briar 7052	Shetland
6440	E. W. Horton	Muscatine	Puck, Jr. 8244	Shetland
5870	J. H. Vân Camp and F. B. Baurford	Muscatine	Grignon 52968 (73284)	Percheron
6519	J. L. Peters	West Liberty	General W. 43848	Percheron
6609	Wm. Hendricks & Son	Muscatine	Inventeur 53453 (79425)	Percheron
1218	August Gettert	Muscatine	Albert 32350 (48457)	Percheron
6880	D. Connell	Muscatine	Oklahoma Allerton 43841	Trotter
7140	B. J. Ostendorp	West Liberty	Grant 19179	French Draft
7191	H. J. Brown	Nichols	Inapaise 71583 (80056)	Percheron

O'BRIEN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6366	M. S. Draper & L. C. Gilbert	Sutherland	Sioux Dan 52268	Percheron
3645	Snook Bros.	Hartley	Hartley Jim 45666	Trotter
6646	F. C. Steel	Sheldon	Reuben W. 45274	Trotter
2247	D. E. Harvey	Sheldon	Hector 31093	Percheron
6952	John S. Keene	Sutherland	Roman 27332 (45998)	Percheron
7070	Shea Bros.	Sanborn	Le Bocage 20876	French Draft
7155	D. Niewendorp	Sanborn	Major Morgan 20460	French Draft

OSCEOLA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4260	Joe Wright	Sibley	Black Joe 20838	Percheron
6944	Albert Kepka	Sibley	Hempfield Hope 12298	Shire

PAGE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1019	Rope & Herzberg	Yorktown	Vernot 45572 (57364)	Percheron
6876	H. F. Dunn	Clarinda	King Chas. Van Valkenburg 19715	French Draft
3277	T. D. Bryson	Hepburn	Gazon 26912 (45979)	Percheron
2713	Veak & Anderson	Essex	Tribsign 45044	Trotter

PALO ALTO COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6408	M. Gappy	Cylinder	Bill 53190	Percheron
6409	E. L. Archer	Ruthven	Bijou II 4685 (44586)	Belgian
5335	C. E. Herrick	Hallard	Ardlington 51083	Percheron
397	Ed Arnette	Graettinger	Highland Dandy 2[illegible]542	Percheron
6846	O. J. Norland	Cylinder	Haricot 71367 (73656)	Percheron
3050	A. W. Wagner	Emmetsburg	Tricolet 50650 (60116)	Percheron
6899	W. R. Moore	Cylinder	Hidalgo 18954 (78178)	French Draft

PLYMOUTH COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6463	Stoll Brown	Le Mars	Hyalin 43539 (73966)	Percheron
6778	Hild Bros.	Hinton	Rentner 5219	German Coach
6779	Hild Bros.	Hinton	Leutwein 5221	German Coach
6664	J. F. Donlin	Merrill	Yan 5268 (56790)	Belgian

POCAHONTAS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5060	Wilder Small	Gilmore City	Horseman 3744 (46758)	Belgian
3069	Nitzke Bros.	Varina	Frodoard 47115 (61993)	Percheron
4688	A. L. Conwell	Gilmore City	Balzac 3408 (42038)	Belgian
3634	Sam Bowen	Laurens	Alfo 42768	Trotter
1263	M. J. Hurley	Laurens	Borolyptol 32229	Trotter
6934	W. G. Runyon	Laurens	Goron 71572 (69751)	Percheron
2511	Prendergast Bros.	Fonda	Lake City Matchless 7288	Shire
4269	L. G. Diehl	Laurens	Molitor 44035	Percheron
726	Geo. Obrecht	Havelock	Martin V. 13123	French Draft
7167	Oelrich Bros.	Rolfe	Charlemagne de Petit-Chassart 5445 (Vol. 17)	Belgian
7170	O. F. Edwards	Havelock	Pedro 68366	Percheron

POLK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6352	Cresap Bros.	Altoona	Gregoire 67917 (70870)	Percheron
6421	Cresap Bros.	Altoona	Incisif 67902 (80726)	Percheron
6444	Wilkinson & Sons	Mitchellville	Littleworth Charmer 10397 (25351)	Shire
6459	White, McCoy & Arrowood	Altoona	Horace 60539 (78267)	Percheron
6485	J. H. Warren	Grimes	Marquis de Beaumont 4098 (49558)	Belgian
6711	James Watt	Des Moines	Wardlac 50357	Trotter
6783	C. Y. Clement	Des Moines	George Constantine 49779	Trotter
6841	Chas. Irvine	Ankeny	Danube 5491 (Vol. 18)	Belgian
7010	Le Bross & Barrett	Mitchellville	Hierocles 64825 (78215)	Percheron
3410	A. D. Murrow	Rising Sun	Mendota Champion 6051	Shire
7065	A. J. Rittgers	Grimes	Icare 71578 (81065)	Percheron
7066	A. J. Rittgers	Grimes	Impot 71543 (80417)	Percheron
7068	L. G. Tolles	Elkhart	Stuntney Metaphor 12410 (27813)	Shire
7075	Berkey & Wagner	Ankeny	Consul de Worteghem 5490 (Vol. 17)	Belgian
7087	S. M. Henderson	Mitchellville	Newton Brown Bob 6426	Shire
7088	A. K. Good	Ankeny	John 68150	Percheron

POTTAWATTAMIE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6438	E. B. Ryan	Neola	Hugenot 64803 (74775)	Percheron
2084	Andrew Neilson	Walnut	Sefton 11640	French Draft
6217	C. I. Watermna	Council Bluffs	Haras 64759 (76192)	Percheron
2809	O. L. Morris	Neola	Croquemetaine (52402)	Percheron
2724	Elmer F. Tawzer	Neola	Helmuth 1299	German Coach
6837	E. Morrison	Neola	Chancard 3717 (46736)	Belgian
7052	J. N. Hutchinson	Loveland	Hasard 71624 (75608)	Percheron
308	Fred Juhl	Avoca	Bob 29180	Percheron

POWESHIEK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1699	L. E. Anthony	Malcom	Leopard of Oakhurst 8455 (21596)	Shire
6412	C. U. Sweny & J. C. Mullen	Montezuma	Coro' Yeoman 10010 (24986)	Shire
6413	C. U. Sweny & J. C. Mullen	Montezuma	Harpeau 66759 (77601)	Percheron
6420	Thompson Miller	Brooklyn	Thomas 4253 (51112)	Belgian
6436	A. E. Anger	Brooklyn	King Seal 50999	Trotter
6486	S. A. Sargent et al	Deep River	Clarion Hollogue 3231 (43846)	Belgian
382	N. H. McIliath	Hartwick	Malvern Glory 5405 (16799)	Shire
6701	Chas. Terpstra	Grinnell	Guevrier 63842 (72932)	Percheron
6702	Chas Terpstra	Grinnell	Pella Darnley 12999	Clydesdale
5473	P. C. Gillaspie	Deep River	Berlin 51825 (61560)	Percheron
6270	Ed Tomlin	Malcom	Keota Palmer 49123	Percheron
6771	P. F. Smith	Montezuma	Tim Morgan 5606	Morgan
6773	F. M. Sheley	Montezuma	Morgan Ned 5757	Morgan
871	Chas. Timmerman	Deep River	Scott Gamaleon 31292	Trotter
4179	C. E. Phelps	Guernsey	Bury Client 8876 (23112)	Shire
7131	Mason Live Stock Co.	Grinnell	Yellow Hammer 30442	Thoroughbred
7132	Aaron Dixon	Grinnell	Facteur 20310 (6479B)	French Draft
5486	Mason Live Stock Co.	Grinnell	Bosco 56429	Percheron
7145	P. F. Smith	Montezuma	Van Foxy 5415	Morgan
7146	P. F. Smith	Montezuma	Maxwell 6229	Morgan
7168	Henry J. Schmidt	Grinnell	Bayard II de Braine 3643 (44722)	Belgian
7195	W. J. Niswander	Brooklyn	Enjoleur 64445 (63649)	Percheron

RINGGOLD COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6431	W. J. Kirkendall	Beaconsfield	Hero Ben 53225	Percheron
6477	J. H. Waugh	Redding	Lloyd 19794	French Draft
762	D. L. Parkins	Diagonal	Moscou 25599 (43695)	Percheron
1583	H. G. Healy	Diagonal	Reveur (46169)	Percheron
2499	Mac Clemons	Mt. Ayr	Stuntney Expectant 5374	Shire
164	Lewis Myers	Kellerton	Alger 23049 (42014)	Percheron
7062	H. C. Morgan	Kellerton	Ito 19375	French Draft
7153	C. E. Bliss	Diagonal	Captain Bird 40460	Trotter
7212	Joseph McDonald	Diagonal	Gray Brilliant 53020	Percheron

SAC COUNTY.

6404	Wm. Corsant	Sac City	Calypso II 52869	Percheron
3926	Henry Morrison	Lytton	Arcole 2851 (41884)	Belgian

SCOTT COUNTY.

6688	J. L. Thatcher	Davenport	Hiron 43498 (77607)	Percheron

SHELBY COUNTY.

1530	Ross E. Smith	Panama	Tronda's Chieftain 10291	Clydesdale
6450	John Klinkefus	Irwin	Houi 63514 (77790)	Percheron
6516	L. H. Pickard	Harlan	Attorney Onwood 49055	Trotter
1061	J. P. Nelson	Harlan	Dandy 22565 11151	Percheron and French Draft
6566	Klinkefus Bros.	Irwin	Stock Exchange 11259 (25654)	Shire
2172	J. L. Barber	Harlan	Corsair 40934	Percheron
6840	P. H. Ruffcorn	Defiance	Hisse 71347 (75722)	Percheron
6855	Herman Haepper	Shelby	Joe Banker 53714	Percheron
6923	J. M. Mayer	Defiance	Keota McKinstry 49092	Percheron
6939	Peter B. Ash	Irwin	Bienvenu 5437 (58920)	Belgian
7023	A. B. Benton	Botna	Sargant 53766	Percheron
1065	Farrell, Dunlap & Clarke	Irwin	Pacifidue 40395 (48534)	Percheron
7184	Martinus Knudson	Harlan	Dave 18700	French Draft
3238	A. G. Curl	Irwin	Rosier 26144 (40778)	Percheron
3051	Taylor Plummer	Harlan	Raglan II 8549 (21778)	Shire
3166	V. M. Kibby	Irwin	Mastoque II de Vlieringen 1976 (28090)	Belgian

SIOUX COUNTY.

6749	P. C. Riebling	Hull	Usinier Jr. 73720	Percheron
6777	Wm. Grotenhuis	Sioux Center	Ambulant 5223	German Coach
3250	Chris Ullman	Ireton	Morell 40932	Percheron
6884	Schneider, Lehman & Hofer	Rock Valley	Gordier 64844 (70888)	Percheron
6932	Joe Stientjes	Boyden	Prince David 48248	Percheron
6750	G. B. Kuyper & Co	Sioux Center	Baron de Boussart 5321 (48348)	Belgian
5878	Wm. Grotenhuis	Sioux Center	Chimes 49821	Percheron
7034	L. F. Morris	Ireton	Darnley's Baron Time 12739	Clydesdale

STORY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6426	Z. T. Burnett	Kelley	Imp. Prince of Greenhill 1347 (10519)	Hackney
2882	Abrahamson & Eckley	Story City	Julo 2151 (Vol. 12)	Belgian
6842	Z. T. Burnett	Kelley	Helois de Rhone 5492 (58888)	Belgian
4031	Hanson Bros. & Olsen	Huxley	Monarch 51801	Percheron
6914	J. H. Dodds	Gilbert Station	Prince Ell 45927	Trotter
6920	J. G. Scott	Shipley	Baron de Langrau 5221 (48136)	Belgian
6167	Johnson Bros.	Story City	Money Maker 15690	French Draft
6983	M. J. Nelson	Cambridge	Irrite 70272 (81056)	Percheron
7093	C. M. Minkler	Nevada	Gray Lad 21614	French Draft
2458	S. S. Hansen	Collins	Victor 47206	Percheron

TAMA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6369	Joe S. Haynes & John Lowrey	Garwin	Express 280	German Coach
6497	J. W. Kern	Traer	Pedro 60460	Percheron
5275	J. B. Musel	Chelsea	Bolivar 56547	Percheron
6789	V. Chaloupek	Elberon	Brabancon 5442 (53894)	Belgian
6817	J. B. Musel	Chelsea	Hercules II 3591	Belgian
4421	Claus Wamsen	Elberon	Pompey 42382	Percheron
1351	Carl Halverson	Garwin	John Adrian 0611	Trotter
5789	O. H. Chitty	Toledo	Darius 60217	Percheron
523	Martin & Joe Foley	Clutier	Coad 41029	Percheron
4431	Sam Kupka	Toledo	Prince 1025	Belgian
6946	Wm. Bodle	Traer	Hichon 65331 (74630)	Percheron
6989	Ehrich & Miller	Dysart	Eude 60364 (62645)	Percheron
7007	Guy Monroe	Elberon	Gilbert Jay 47532	Trotter
7013	Jesse M. Blake	Toledo	Melbourn 52666	Percheron
7060	J. D. Filloon	Toledo	Invite 72015 (81331)	Percheron
6551	G. W. Harrington	Garwin	Roscoe 56604	Percheron
7220	James Morgan	Traer	William 65618	Percheron
7221	Chas. Hagadorn	Traer	Billy of Wolf Creek 14231	Clydesdale

TAYLOR COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6375	Gordon & Richards	Lenox	Haimps 68681 (74280)	Percheron
4327	Chas. Clark	New Market	Lucky Strike 50240	Percheron
6498	Urban Akers	Gravity	Van Morgan 5585	Morgan
6501	W. R. Oliver	Lenox	Waldersly Squire 11359 (26799)	Shire
6564	E. T. Philpott	Lenox	Brilliant Boy 53242	Percheron
3048	J. A. Saville	Blockton	Oom Paul 23938	Percheron
5615	Frank Haidsaik	Bedford	Boston 4173 (52322)	Belgian
5403	Clyde Edwards	New Market	Bijour 43066	Percheron
6959	W. H. Scane	Bedford	Vainqueur de Soignies 5685 (59086)	Belgian
6965	Sam Brand	Gravity	Illico 44462 (80135)	Percheron
6997	G. D. Mix	New Market	Sherman K 11958	Shire
6996	G. D. Mix	New Market	Ocean 57401 (66120)	Percheron
6990	L. W. Ross	Gravity	Heron 43378 (77480)	Percheron
7039	A. L. & G. W. Page	Lenox	Hidalgo 44465 (78249)	Percheron
7044	Sanford McCorkle	Bedford	Scratby Gold Coin 11426 (28661)	Shire

UNION COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6362	Stream & Wilson	Creston	Cesar de Roulers 4849 (58582)	Belgian
1453	Frank Hyskell	Lorimor	Charley M. 17137	Trotter
6448	Geo. W. Bilbo	Creston	Clinton 11529	Shire
6449	Geo. W. Bilbo	Creston	Dixon 66160	Percheron
6460	Geo. W. Bilbo	Creston	Spencer B. 11558	Shire
6461	Geo. W. Bilbo	Creston	Baxter B. 11559	Shire
6467	Geo. W. Bilbo	Creston	Hussier 64750 (74898)	Percheron
6468	Geo. W. Bilbo	Creston	Hanriot 64754 (77217)	Percheron
6469	Geo. W. Bilbo	Creston	Ben Moore 63477	Percheron
6470	Geo. W. Bilbo	Creston	Prince Harbert 4745	Belgian
6495	John Hall	Creston	Nitrogen 6181	Trotter
6528	Geo. W. Bilbo	Creston	Burben 20024	French Draft
6529	Geo. W. Bilbo	Creston	Edison 20022	French Draft
5860	Geo. W. Bilbo	Creston	Ray Vincent 11018	Shire
6722	Geo. W. Bilbo	Creston	Logan 53622	Percheron
6723	Geo. W. Bilbo	Creston	Pedro 53621	Percheron
6724	Geo. W. Bilbo	Creston	Paxton 53623	Percheron
326	John W. Keller	Lorimor	Bluffer 29717	Percheron
6811	J. P. Crowell	Shannon City	Sultan 52444	Percheron
6859	Geo. W. Bilbo	Creston	Pyrus 53765	Percheron
6878	Frank A. Ide	Creston	Sideram II 44017	Percheron
6879	Frank A. Ide	Creston	Trajan 68892	Percheron
6915	E. J. Beeber	Lorimor	Giblet 62404	Percheron
6925	H. A. Wessels	Cromwell	Agricule 5667 (55112)	Belgian
6926	Brown & Keisling	Kent	Boquet 5669 (59022)	Belgian
6936	Morrison Bros.	Arispe	Monsoneur 74495	Percheron
4033	E. J. Beeber	Lorimor	Butor 42543 (62561)	Percheron
5244	L. L. Stoner	Lorimor	Jacob 51832 (68389)	Percheron
7050	A. Latimer Wilson	Shannon City	Brutus de Sartalard 4960 (Vol. 17)	Belgian
7073	J. P. Nichol	Shannon City	Fugier 10193	Percheron
7986	Geo. W. Bilbo	Creston	Sultan 27855 (46931)	Shire
7096	D. J. Gibbons	Cromwell	Donald Dennye 12407	Shire
568	A. A. Webb	Afton	Bijou 10839	French Draft
7173	Stream & Wilson	Creston	Hoboist 5631 (2050)	German Coach
7183	D. J. Gibbons & Son	Cromwell	Black Lad II 8681 (23932)	Shire

VAN BUREN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6512	F. P. Horn	Douds Leando	Galerus 57887 (70615)	Percheron
6805	Winchester Horse Co.	Birmingham	Harley 64312 (77125)	Percheron
6810	S. H. Bauman	Birmingham	Van Buren 66085	Percheron
6860	J. W. Wolf	Milton	Suffren 20019 44136 (51476)	Percheron and French Draft
823	Wm Hamm	Milton	Keota Blaurock 24823	Percheron
5341	Ellis Rail	Birmingham	Cissel 1493	Saddle Horse

WAPELLO COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
6381	William Starr	Ottumwa	Captain Starr 50557	Trotter
6403	F. W. Avery	Agency	Rex Hero 42072	Trotter
6415	Edwin Barnes	Blakesburg	Heriodiade 65885 (75950)	Percheron
6507	J. S. Reno	Agency	Galip 51439	Percheron
1843	J. S. Reno	Agency	Fordy Spark 8446 (23320)	Shire
7033	Jesse Ross	Kirkville	Imprime 71565 (80124)	Percheron
7057	F. W. Avery	Agency	Scottish Chief 14552	Clydesdale
7058	F. W. Avery	Agency	Highland Albert 15578	Clydesdale
7194	F. F. Pumphrey	Eldon	Buster Brown 51968	Percheron
3692	Geo. Lentner	Ottumwa	Duke of Scotland 12631	Clydesdale
4006	Geo. Lentner	Ottumwa	Mason 16162	French Draft
7209	Eli Swain	Blakesburg	Gambadeur 71605 (72302)	Percheron

WARREN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1290	B. P. Dougherty	Lacona	Solide 21454 (43346)	Percheron
5689	Harry E. Hopper	Indianola	Frayola 52023	Trotter
6690	Harry E. Hopper	Indianola	Mignola 52020	Trotter
6691	Harry E. Hopper	Indianola	Scatchola 52022	Trotter
6692	Harry E. Hopper	Indianola	Dingola 48769	Trotter
6693	Harry E. Hopper	Indianola	Kingola 48770	Trotter
6709	Harry E. Hopper	Indianola	Valac 53954	Trotter
6710	Harry E. Hopper	Indianola	Lacallerton 51681	Trotter
6740	Harry E. Hopper	Indianola	Barney Fellows 53097	Trotter
6741	Harry E. Hopper	Indianola	Redwing Boy 01518	Trotter
6317	John Gehringer	St. Charles	King of Diamonds 18323	French Draft
6937	W. W. Barger	Lacona	Black Top 67743	Percheron
4881	Lloyd Reed	New Virginia	Pompi 10040	French Draft
6985	Harry E. Hopper	Indianola	Heron 67174 (74020)	Percheron
6984	Harry E. Hopepr	Indianola	Jacob 4525 (Vol. 16)	Belgian
7024	S. C. Hildebrand	Norwalk	Bold John 53771	Percheron
7090	R. T. Walker	Indianola	Kirk 49877	Percheron
7111	John F. Martens	Prole	Icaga 71561 (81271)	Percheron
7148	Harry E. Hopepr	Indianola	Bergen 46511	Trotter
7169	Harry E. Hopper	Indianola	Leo Muscovite 45034	Trotter

WASHINGTON COUNTY.

2166	J. H. Glancy	Washington	Glick's Plunger 41589	Percheron
6414	D. C. Birney	Washington	Hauer 67909 (76081)	Percheron
3905	D. C. Birney	Washington	Van Raalte 9347 (24840)	Shire
6476	John Soukup	Riverside	Dugan 59021	Percheron
6559	S. C. Yoder	Kalona	Tokomaro 7753 (20977)	Shire
6653	Jesse McCoy	Crawfordsville	Wayland Duke 11073	Shire
6905	Martin Swift	Washington	Helas 60837 (74628)	Percheron
6906	Martin Swift	Washington	Barr None 55711	Percheron
6907	Martin Swift	Washington	Puckrup Prince Harold 6894 (18294)	Shire
6908	Martin Swift	Washington	Washington Herald 12301	Shire
6909	Martin Swift	Washington	Gipsey Chief 45210	Trotter
6910	Martin Swift	Washington	Aloma Chief 54998	Trotter
6911	Martin Swift	Washington	Alo Aloma 52391	Trotter
2238	John Soukup	Riverside	Japonais 27985 (46830)	Percheron
7217	J. A. Marsh	Ainsworth	Jubiter 48000	Percheron

WAYNE COUNTY.

6416	A. J. Morgan	Allerton	Singleton Burgeon 7152 (20024)	Shire
3086	Geo. Swafford	Allerton	Highland Laddie 7050 (22976)	Shire
7121	Scholty & Son	Allerton	Banker 61586	Percheron
7122	Ev Finley	Allerton	Jim Brooks 48561	Trotter
7164	J. T. Hickman	Corydon	Ipsus 64977 (80785)	Percheron
1607	Cool & Hitchcock	Lineville	Creston Jerry 10997	French Draft

WEBSTER COUNTY.

6101	Knud Thorndson	Callendar	Reveur de Mellet 4696 (Vol. 16)	Belgian
7032	Peterson & Soppeland	Badger	Nigger 20540	French Draft
6704	Deer Creek Horse Co.	Deer Creek	Prince de Fouleng 5364 (Vol. 17)	Belgian
7201	T. T. Dugger	Lehigh	Bentoneer Lockheart 45899	Trotter
7203	W. H. Fallon	Fort Dodge	Vyzineer 52868	Trotter
7204	W. H. Fallon	Fort Dodge	Vyzineering 52869	Trotter

WINNEBAGO COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4853	C. E. Holcomb	Buffalo Center	Bavaro 57703	Percheron
6986	L. J. Lewis	Buffalo Center	Beriah 60129	Percheron

WINNESHIEK COUNTY.

4774	A. J. Owen	Jackson Jct.	Prince George 17465	French Draft
3851	A. J. Owen	Jackson Jct.	Prince 11083	Clydesdale
6417	L. J. Anderson	Decorah	Wrenbow 52999	Trotter
6418	L. J. Anderson	Decorah	Keota Hustler 18229	Percheron
6419	L. J. Andrews	Decorah	Brock 2168	Belgian
1391	Erick Anderson	Decorah	Pomard 21275 (43229)	Percheron
6506	Peter A. Caldow	Castalia	Coming Wonder 15125	Clydesdale
6520	J. J. Seegmiller & Son	Decorah	Montier 19000	French Draft
6563	Arthur A. Larsen	Ossian	Dewey 2169	Belgian
6943	Brandt Bros.	Ossian	Winenshiek 68915	Percheron
5705	August Lansing	Ossian	Exchequer 14493	Clydesdale
7124	I. D. Ward	Decorah	Herbert Parole 55334	Trotter

WOODBURY COUNTY.

6518	R. A. Hart	Danbury	Darko 66914	Percheron
6526	Wm. Strohbehn	Moville	Pedroe 59888	Percheron
2408	R. J. Rowse	Correctionville	Clipser 9097	Clydesdale
6792	Wm. Walker	Sioux City	Nero 71707	Percheron
2870	Chas. H. Babcock	Moville	Wildair 23037	Percheron
6969	Wm. Walker	Sioux City	Marock 33704	Percheron
6978	C. F. Hood	Leeds Station	Richmond 56091	Percheron
4095	Geo. Hirschman	Pierson	Keota Allen 44753	Percheron

WORTH COUNTY.

6525	A. F. Garner	Meltonville	Rig Summer 53175	Trotter
6784	G. F. Overholt	Manly	Sun Shine 66598	Percheron
6921	G. F. Overholt	Manly	Lester 64024	Percheron
7208	H. E. Wiley	Northwood	Farragut 58756	Percheron

WRIGHT COUNTY.

6871	E. Luick	Belmond	Heironique 71350 (77708)	Percheron
5377	Paul Findson	Clarion	Norvalwood 36144	Trotter
6953	Chas. J. Pyle	Clarion	Luther 19691	French Draft
6954	Chas. J. Pyle	Clarion	Whapshot 19690	French Draft
7080	C. E. Hubbell	Dows	La Pelit 54923	Percheron
2995	W. H. Mantle	Goldfield	Monome 41547 (62758)	Percheron
7182	Webb & Trees	Belmond	Lyman 59169	Percheron

HORSES OWNED IN NEIGHBORING STATES.

6847	Clarence E. Dodson	**Blue Earth, Minn.**	Emerson 58446	Percheron
7082	John I. Nelson	**Faribault, Minn.**	Gilbert 47734	Percheron
7092	N. Halsey	**St. Paul, Minn.**	Pedroe 29017	Percheron

PART XV

Directory of Associations and Organizations Representing Agricultural Interests in Iowa

Iowa Department of Agriculture—President, C. E. Cameron, Alta; Vice-President, O. A. Olson, Forest City; Secretary, A. R. Corey, Des Moines; Treasurer, G. S. Gilbertson, Des Moines.

Iowa State Horticultural Society—President, Wm. Langham, Cedar Rapids; Vice-President, M. J. Graham, Adel; Secretary, Wesley Greene, Davenport; Treasurer, F. O. Harrington, Williamsburg.

Iowa Park and Forestry Association—President, Eugene Secor, Forest City; Vice-President, M. J. Wragg, Des Moines; Secretary, Wesley Greene, Davenport, Treasurer, A. T. Erwin, Ames.

Society of Iowa Florists—President, J. S. Wilson, Des Moines; Vice-President, J. L. D. Fulmer, Des Moines; Secretary, Wesley Greene, Davenport; Treasurer, J. T. Temple, Davenport.

Western Grain Dealers' Association—President, I. L. Patton, Newton; Vice-President, E. A. Fields, Sioux City; Secretary, Geo. A. Wells, Des Moines; Treasurer, Geo. A. Wells, Des Moines.

Iowa Corn Growers' Association—President, A. L. Plummer, Altoona; Vice-President, Fred H. Klopping, Neola, Iowa; Secretary, Prof. M. L. Bowman, Waterloo; Assistant Secretary, E. K. Morgan, Waterloo; Treasurer, Fred McCulloch, Hartwick.

Corn Belt Meat Producers' Association—President, A. Sykes, Des Moines; Vice-President, J. M. Brockway, Letts; Secretary, H. C. Wallace, Des Moines; Treasurer, Chas. Goodenow, Wall Lake.

Iowa State Highway Commission—Highway Engineer, Thos. H. MacDonald, Ames; Assistant Engineer, C. B. McCullough, Ames; Constulting Bridge Engineer, J. E. Kirkham, Ames; Draftsman, A. G. Anderson, Ames; Secretary, Annie Laurie Bowen, Ames.

The Farmers' Grain Dealers' Association—President, B. Hathaway, Kingsley; Vice-President, J. W. Hagnus, Barnum; Secretary, E. G. Dunn, Mason City; Treasurer, D. D. Paine, Eagle Grove.

Iowa Swine Breeders' Association—President, J. H. Watson, Madrid; Vice-President, Geo. T. White, Dallas Center; Secretary, C. C. Carlin, Des Moines; Treasurer, C. C. Carlin, Des Moines.

Iowa State Dairy Association—President, E. R. Shoemaker, Waterloo; Vice-President, F. W. Stephenson, Lamont; Secretary, J. J. Ross, Iowa Falls; Treasurer, F. L. Odell, Des Moines; Iowa Dairy Expert, Hugh G. Van Pelt, Waterloo.

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES AND FAIR ASSOCIATIONS IN IOWA.

Adair—Adair County Agricultural Society, Greenfield; President, W. S. Mitchell, Greenfield; Secretary, Fred D. Martin, Greenfild.

Adams—Adams County Agricultural Society, Corning; President, S. M. Richey, Corning; Secretary, Geo. E. Bliss, Corning.

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